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REMOVAL OF FOREIGN BODIES FROM THE AIR PASSAGES.*

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The entrance of a foreign body into the larynx is at once the signal for violent expulsive efforts, and in the majority of instances voluntary extrusion is accomplished. Should the object, however, pass the vocal cords, the route to the bifurcation of the trachea is free and unobstructed. At the bifurcation, as the right bronchus is larger and turns at a less abrupt angle to reach the root of the lung, the body is more likely to fall into its lumen, although this result is by no means positive.† If the object is of irregular shape it will not closely fit, and violent efforts at coughing may still loosen it. It may, however, be arrested in its reverse course at the vocal cords. The violence of the efforts, and the interference with the air supply, unfortunately make inspiratory suction as sudden and nearly as intense as expiration, and the offending object may be sucked further into the air passages. The position of final fixation will depend upon these efforts and upon the size and character of the foreign body. The degree of air hunger will depend upon the amount of blockade. Should the entire main bronchus be obstructed, one-half the respiratory tract will be shut off and the dyspnea becomes extreme. Unfortunately, the physician is rarely at hand and immediate professional measures of relief can not be instituted. The majority of these accidents occur in children; consequently, it is well to instruct parents as to the procedures that should be adopted. The rule as ordinarily taught is to the effect that inversion of the child is unsafe, since the object may become blocked within the larynx. As the body has, however, entered by this route, and as it is the one that must be taken in any voluntary expulsion, it is probably the safest domestic practice that can be instituted and may prevent the object from being sucked still lower in the bronchus. An exaggerated prone Trendelenburg position may be maintained until the arrival of the surgeon. Succussion of the individual and vomiting have occasionally dislodged the body. Coughing should be encouraged, but the violence of inspiratory movements should be restricted as far as possible. Brodie reports the case of an adult in whom a half sovereign had reached the bifurcation of the trachea. By inversion of his body in the prone position, and succussion, he was able, after six weeks, to dislodge the offender by coughing, and full recovery ensued.

If the arrest has taken place at the vocal cords, a laryngoscopic examination will probably reveal it, and it may be extracted by forceps or by laryngotomy. In splitting the thyroid cartilage and opening the larynx, care should be taken to keep directly in the median line and to avoid injury of the arytenoid cartilages and muscles. Cocain should be applied to the mucous membrane both before and during the operation, to prevent reflex inhibitory influences upon the heart.

If an *x*-ray apparatus is at hand, and the foreign body is one which is impenetrable to these rays, as coins, nails, etc., the location may sometimes be accurately determined by making shadowgraphs at different angles. Unfortunately, the distress is so urgent and extreme that it is difficult to induce the child to remain quiet long enough to obtain such a shadow unless ether is administered; still, the *x*-ray representation fills a most important place in both acute and chronic blockades of the air passages.

With children, beads, beans, portions of whistles and toys are common intruders.[1] Hard bodies will probably imbed themselves and do not offer much opportunity of being seized by forceps. Vegetable substances are likely to swell from the moisture if they remain long *in situ*, and are, therefore, difficult to dislodge. In one of my fatal cases one-half of the brown shell of a chestnut was drawn far down into the subdivision of a bronchus.

It is important that the history should be reliable, and when a body has been swallowed, close investigation is necessary to determine whether the object has entered the air passages, and secondly, its location. Of course, there are many cases where the symptoms are unmistakable, but when in doubt a most careful diagnosis should be made. A young child not infrequently has a foreign body in its mouth; is seized with violent coughing as the body attempts to enter the larynx, and yet it passes into the stomach. Not a few tracheotomies have been performed in the search for such objects which have later been passed per rectum; consequently, it is unwise to operate in the absence of definite symptoms. Moreover, many a child has been apparently choked with a toy which was supposed to have been swallowed and which has ultimately been found in the corner of the nursery. I have myself witnessed in the practice of one of our most prominent surgeons, a tracheotomy with prolonged search, in which case the article which had supposedly been swallowed was later found in the pocket of the child, and an examination of the lungs (which should have been made previous to the operation, but which was instituted afterwards) developed the fact that the dyspneic symptoms were due to double pneumonia from ordinary causes.

Following impaction, the pain and the absence of respiratory movements will usually be found upon one

* Read at the Fifty-second Annual Meeting of the American Medical Association, in the Section on Surgery and Anatomy, and approved for publication by the Executive Committee of the Section: Drs. W. J. Mayo, H. O. Walker and A. J. Ochsner.

† Crile: Surgery, Respiratory System, 2d Edition, p. 92.

1. Poulet: Foreign Bodies, 1880, vol. ii, p. 22.

side of the chest. The absence of vesicular murmur shows the interference to entrance of air, which will be followed later by dulness and signs of consolidation. In partial occlusion the respiration will be stridulous. The interpretation of these signs, taken in connection with other symptoms, must rest with the surgeon, but he must not be deceived by the lull in symptoms that not infrequently follows the initial blockade.

Tracheotomy.—The opening of the trachea is naturally the most frequent method for reaching an impacted foreign body, an operation that was advocated as early as 1644 by Frederic Manavius. Speedy relief is usually demanded, and ether or chloroform may be employed, or better, local anesthesia in order to retain the use of the extraordinary muscles of respiration. In doing this operation it is better to remove a considerable circle, excising one or two cartilaginous rings, since a simple slit may interfere with the expulsion of the body. If a slit only is made, lateral stitches holding it open are better than a tube. Not infrequently the foreign body is ejected by the primary cough induced by the operation; consequently it should be the duty of an assistant to watch carefully for its appearance. Fortunately, expulsion occurs in about one-half the cases operated upon. This result may be hastened by irritation with a feather. The opening should be as nearly as possible to the top of the sternum, and the forceps must be used with extreme care. The difficulties in locating the body with tracheotomy forceps depend largely upon its character. A bean or kernel is of the same consistency and feeling as the cartilaginous bifurcation of the trachea. If the object is known to be a soft vegetable one, ordinary serrated forceps will not hold. Very short needle-like teeth which will sink into and hold the substance are better. With beads, buttons, tin whistles, etc., successful removal becomes difficult, even when they can be grasped.

One familiar with the use of the cystoscope may, by throwing the head far back and to one side, obtain a view of the foreign body through an inserted tube with electric light. For hard objects a large soft-rubber tube attached to a Bigelow litholapaxy evacuator may be carried down the trachea, and strong suction made upon it, or an aspirating pump or rubber ball may be attached. The evacuator is better, however, lest the body once extracted be again sucked back into position. In case of tacks, nails, etc., a small magnet or an electrical probe may be inserted through the trachea. Blunt curettes, wire hooks, scoops, loops, etc., are occasionally useful. The dangers to the trachea and bronchi by prolonged instrumentation are very great and should never be continued more than a few minutes. The risks of pneumonia are so greatly increased by instrumentation that Weist,[2] in an analysis of 1674 cases, found that the dangers of death from this cause in unsuccessful cases fully counterbalanced the benefits obtained by the number of extractions by tracheotomy. The proportions are one death in three and one-half cases without operation; one in four with tracheotomy. His conclusions in regard to this subject will probably not be materially changed by our present methods, since, although the pneumonia is septic in its origin, yet the sepsis even in former cases was probably not due in large measure simply to the instruments, but to the traumatism to the bronchi. Experiments show that the entering air is septic in the larger bronchi, but aseptic in the smaller divisions.

2. Trans. Amer. Surg. Assoc., vol. i, 1883, p. 121.

Failing to secure the intruding object through the tracheal opening, the surgeon is compelled to face two problems, either of which means serious risk to life. Shall he abandon the case to the expulsive efforts of Nature? Shall he rely upon the fact that many such offending bodies have been coughed out even after many years of suffering, and even when the diagnosis of tuberculosis of the lung has seemed positive? In determining the question the surgeon will consider both the character of the foreign body and the amount of interference that it is giving to the air supply. In the case of seeds, etc., voluntary expulsion with subsequent recovery occurs in nearly 74 per cent. of cases.

The other alternative is to reach the bronchus by a direct route. Should the surgeon decide to invade the chest wall in an heroic effort to reach the bronchi, he has before him a series of manipulations, perils, and difficulties that will put to the extreme test his skill, coolness and judgment. Before the introduction of the artificial respiration apparatus, the profound and deadly collapse that immediately followed any invasion of a healthy chest, was sufficient to deter most operators from undertaking such a course. Quenu lost twelve out of fifteen dogs, and while my own experiments have not been quite so serious, they have been very discouraging. In these animals and in rabbits and goats, the communication between the two pleural cavities which exists just above the tendinous center of the diaphragm renders the entrance of air doubly dangerous. Fortunately, we are now better equipped and can confidently rely upon our artificial respiration methods, but without such accessories the conditions are appalling. The exceptional cases in which atelectasis does not occur are so few in number and are so unexplainable that they can not be depended upon. The surgeon must also consider the fact that even when the bronchus is reached by any route, the rigid walls prevent the easy recognition of the foreign body either by sight or touch. Again, as in Curtis' case, even when found in a secondary bronchus, it could not be reached or extracted. In experiments upon dogs I have repeatedly failed to find in the bronchi, pebbles that I had introduced through tracheotomy wounds.

Unfortunately, practice upon the cadaver yields but a slight realization of the conditions found in the living subject. I have at autopsy seen the bronchus of a dog apparently within easy reach, which same bronchus I had seen ten minutes before surrounded by huge pulmonary and azygos veins, with aorta, pneumogastric nerve, root of lung, and every structure in the neighborhood being violently dragged by the wide excursions of the lung in the frightful air hunger of the collapse from acute pneumothorax.

When an opening of any considerable size is made in the pleura and air rushes in, the sudden symptoms of collapse are usually instantaneous. The sudden shifting of the oxygenation of air upon one-half the ordinary circuit; the violent efforts of both inspiration and expiration; the enormous movement of the lung in the effort to produce a vacuum in the chest; the flapping of the pleura and mediastinum; the huge swelling veins filling and emptying and covering the area of operation; the great peril of the patient; the cyanosis and deficient oxygenation are such complications as will greatly delay and often entirely prevent all safe manipulative measures.

I have called attention to these difficulties, not to exaggerate them, nor to deter any surgeon from invading

the chest wall, but only to warn him against rash work without proper apparatus, since failure will necessarily bring discredit upon the surgeon and disaster to the individual. A somewhat extended but still incomplete examination of the literature on the subject fails to reveal a recovery after opening of the bronchus. My object is only to urge that unless an artificial respiration apparatus is at hand, and oxygen obtainable, it will be wiser to cease one's operative methods, after short manipulations through a large tracheal opening. With full appliances, however, and a full knowledge of the dangers, one may calmly proceed to enter the chest by a selected route. The conditions are entirely different from those encountered in a diseased lung or pleura, and preliminary injection of air or liquid will avail but little. A small dose of atropia will be helpful.

The oft-tried expedient of plugging the hole in the pleura, or of dragging the lung into the opening, or grasping the base of the lung, is here of no avail, since the search for the bronchus is absolutely prevented by any of these procedures. Air hunger being then the most serious of the complications, some reliable means of artificial respiration must be at hand, or the patient must die in a few moments. Fortunately, the Fell-O'Dwyer[3] apparatus gives us the much-needed help. The apparatus consists of intubation tubes of various sizes attached to a handle, by means of which one of them of proper size can be held permanently within the chink of the glottis, while air is pumped directly into the lungs by bellows worked by hand or foot pressure. Insufflation is accomplished by moderate pressure about fifteen times in the minute, while expiration is accomplished by the resiliency of the chest walls

Matas has improved upon this apparatus by using a double pneumatic pump, by means of which the exact amount of air introduced can be measured. He has also attached a manometer to regulate the degree of pressure, and has added a branch tube through which anesthetization can be kept up. The entering air is also filtered through a cylinder filled with cotton. The pump can also be employed for forcible aspiration of air from the lung. Bloom, Doyen and others have altered these instruments, but the principle of forcibly supplying air is the same.

After tracheotomy the intubation tip can be introduced through the opening so as to fit the trachea, or it can be carried into the glottis and the wound closed.

A pressure equal to 6 mm. mercury has been found sufficient to dilate the lung, while too great pressure, as 33 mm., will interfere with respiration. If too great force is used, emphysema or air vesicle rupture may take place. The artificial movements should correspond as closely as possible to the normal respirations.

By the employment of such an appliance for carrying on respiration, the chest wall may be opened either anteriorly, posteriorly, or at the side. A large opening while much more dangerous as regards atelectasis, yet greatly facilitates the operation. The employment of a tiny electric bulb within the chest also adds greatly to the rapidity and safety of the manipulations.

Anterior Thoracotomy.—Milton, of Cairo,[4] has recommended an operation of entrance which he calls the normal thoracic invasion, and has successfully practiced it upon a living patient. In young children with flexible bones it would be feasible for reaching the bronchus.

With a saw he splits the sternum longitudinally throughout its entire length, and forcibly retracts the halves, thus separating the two pleural layers, and reaching the anterior mediastinum. In attempting this operation it should be remembered that the pleuræ come together not in the median line, but at a line nearly at the left border of the sternum. In this, as in all other routes of entrance to the thorax, it is absolutely essential that an efficient artificial respiration apparatus shall be constantly employed in the prevention of collapse.

Gaston's[5] anterior opening is made as follows: A quadrilateral trap-door flap is made to include the third, fourth, fifth and sixth ribs, and turned back upon its base at the costal cartilages, thus avoiding the internal mammary. The outer end of the square flap is at the mid-axillary line, and the entire chest walls are cut through with knife and saw.

In making an anterior thoracotomy[6] I have tried various forms of incision. The bronchus of the second lobe can be readily reached anteriorly, can be incised and afterwards stitched with a staphylorraphy needle. In another operation upon the right side, with excision of the fifth rib, I was easily able to expose the bronchus of the right upper lobe. The bronchial, pulmonary and a very high azygos vein were pushed aside and the bronchus incised for a third of an inch without wounding any other structure. Whenever the wound in the bronchus was not subsequently stitched, and the chest wall was closed at the end of the operation, each inspiratory act caused an increase of the pneumothorax by entrance of air through this slit, as was evidenced by the bulging of the wound and the increased dyspnea, ending in death.

The same thing occurred in another dog after an excision of the fifth rib, and an opening of the right bronchus. The pneumothorax steadily increased after the closure of the wound, with bulging and escape of air from within outward at each respiration until death occurred. It is easily seen that while air can pass from the interior of the bronchus outwardly, the rounded shape of the tube prevents return from pleural cavity to bronchus. This air from the large bronchi is septic.

Posterior Thoracotomy.—Nesiloff, Bryant and others have proposed to reach the root of the lung posteriorly. Bryant's operation is as follows:[7] In order to give room for the flap, the scapula is carried far outward by raising the arm and carrying the shoulder forward. A square flap three inches in size is made, with its base toward the spinal column, and three ribs, the third, fourth and fifth, are sawed through as far out as their angles, near the posterior border of the axilla. The pleura is then separated from the anterior surface of the ribs by the fingers, and the flap is turned backward upon its base as a hinge, the ribs being separately turned out. The intercostal arteries were ligated before opening the pleura. The presence of the vena azygos and the pulmonary vein will greatly interfere with manipulations, and these, as well as the pneumogastric, must be carefully avoided. If the foreign body can be located, a long incision (long enough to permit removal without laceration) is made in the bronchus. The bronchus is not closed, but packed and drained, as there will be discharge of mucus and inflammatory products. The flap with the ribs should be replaced, but the middle rib may be removed entirely for drainage, if advisable. Any

3. Northrop: N. Y. Pres. Hosp. Reports, 1896, p. 132.
4. The Lancet, London, March 27, 1897.
5. Trans. Amer. Surg. Assoc., vol. xiv, 1896, p. 465.
6. Trans. Amer. Surg. Assoc., 1891, p. 345, vol. ix. Trans. Coll. Phys., Phila., 1891. Amer. Jr. Med. Sciences, Dec., 1891. Univ. Med. Mag., Feb., 1892.
7. Bryant: Posterior Mediastinum. Trans. Amer. Surg. Assoc., vol. xiii, p. 443.

given spinous process indicates the situation of the vertebral extremity of the rib immediately below. Bryant places the division line between the posterior mediastinum proper and the posterior part of the superior mediastinum at the lower portion of the fourth dorsal vertebra. The separation of the pleura is accomplished with the finger, and also by a sawing motion of a strong silk thread carried beneath the rib. The same ligature may be used to draw beneath the rib a chain saw, so as to operate from within outward and avoid premature wounding of the pleura. This opening is probably more favorable for reaching the esophagus than the bronchus. The bronchus in a man will be distant about one and one-half inches from the opening. The operation is one requiring careful manipulation, cool judgment, speedy recognition and skilful treatment of each danger as quickly as it arises.

Curtis,[8] in a posterior thoracotomy for an impacted seed vessel of a plant in the right bronchus, tried to extract it with a forceps through the trachea, but failed. At a second operation the boy was placed face downward, with one shoulder raised. A quadrangular flap was raised from the posterior portion of the chest and turned outwardly toward the scapula. Its free edge was near the vertebral spine. The fourth, fifth and sixth ribs were then stripped. The lower layer of the periosteum and intercostal muscles were divided without opening the pleura. The ribs being lifted up, the pleura was carefully detached from the posterior mediastinum and from the posterior chest wall. The bronchus was easily reached, but the azygos vein covering it prevented incision. He encountered the same difficulties that I have always experienced, the violent action of the lung and of the flapping pleura, which interfered most seriously with all manipulations, and he was finally obliged to pack the wound and suspend his efforts. The next day he renewed the attack. The pleura had now become adherent to the lung, and the action was less violent. The bronchus was opened through its posterior wall without hemorrhage, but search with forceps failed to find the body; neither could it be found in the trachea. It was finally discovered by the fingers through the lung substance. The pleura was sewed to the lung and the lung held by a silk stitch. The thermocautery was used directly through the lung substance, but failed to reach the object. The operation was finally suspended on account of the patient's collapse. A drainage tube was inserted with packing, but pneumonia developed on the following day and the patient died in forty-eight hours. At the autopsy the foreign body was found in the secondary bronchus near the end of the drainage tube. The object had been swallowed three days before the first operation. Rushmore[9] in a similar attempt anteriorly was compelled to abandon the operation, and the patient died.

Anyone interested in the subject of intralaryngeal insufflation will be abundantly repaid by perusing Matas' able articles.[10] In these papers he shows that insufflation through a deliberately introduced laryngeal tube was in common practice for the resuscitation of the drowned as far back as the War of the Revolution; that William Hunter used both bellows and intralaryngeal tubes; that Matas' present pump was forestalled by the double pump of Courtois attached to a tracheotomy canula, more than a century ago; that in the earliest years of the last century such a tube was a part of the regular obstetrical outfit for the resuscitation of new-born infants;[11] that Ribemont in 1877 used an intubation canula almost precisely like the one of O'Dwyer; that Truehead of Texas again in 1869 brought out an instrument upon the same plan as the Fell-O'Dwyer instrument.

The Bloom modification of attaching an ordinary rubber syringe bulb to the laryngeal tube is excellent, and the Doyen[12] double bellows and tubes are also good.

The work of Tuffier[13] and Hallion, Quenu and Longuet, Matas, Parham and others, has added greatly to the practical application of artificial forcible insufflation through an intralaryngeal tube. It is now the best known assistant, not only in the performance of lung surgery, but also in the resuscitation of the asphyxiated, the drowned and the new-born. It is also most serviceable in opium poisoning, and in the arrested respiration of anesthetization. (I always keep the Fell-O'Dwyer apparatus alongside the oxygen jar, close outside my clinic door.)

When the foreign body remains permanently fixed in the bronchus, septic pneumonia is a frequent result. In many cases this process leads on to septic abscess, or, if the blockade is complete, gangrene may result. Expulsion of the foreign body and of the purulent surrounding material sometimes occurs, often after months of delay. More frequently, however, death ensues. In the chronic cases the hemorrhage, emaciation and septic conditions often simulate tuberculosis. The proper treatment for all such abscesses or gangrenous areas of lung is a surgical one. The diseased area having been carefully located, a rib should be excised subperiosteally, and contamination of the pleural cavity prevented by suturing of the lung to the chest wall in the form of a parallelogram, before opening. A sharply curved perineal needle with handle is convenient for this purpose. Incision of the abscess and free drainage will offer the best hope for cure.

CONCLUSIONS.

1. Coughing should be encouraged; forcible inspiration restrained.

2. Inversion in the prone position as a domestic practice is advisable.

3. Laryngoscopy is helpful if the body is lodged at the vocal cords. It may be extracted by forceps or by laryngotomy.

4. If time permits, the *x*-ray may be brought into serviceable use for diagnosis.

5. Careful diagnostic investigation is important to determine the actual presence of an impacted body, and its location.

6. Tracheotomy under local anesthesia should be the rule if the object is lodged at the bifurcation or in the bronchi. Tracheoscopy, suction and forceps' manipulation must be cautiously employed. Prolonged instrumentation adds greatly to the danger of pneumonia.

7. If extraction is not secured through the tracheotomy wound the chest wall should not be invaded unless an artificial respiratory apparatus like the Fell-O'Dwyer is at hand, and oxygen available. With the assistance of these appliances, however, the bronchus may be reached, anteriorly or posteriorly, since, by their use, rhythmical movements can be maintained.

8. Resultant abscess of the lung should be treated by incision and drainage.

8. Curtis: Annals of Surgery, 1898, vol. xxviii, p. 605.
9. Rushmore: N. Y. Med. Jour., 1891, liv, 85.
10. Trans. Louisiana State Med. Soc., 1898. Trans. South. Surg. and Gynaec. Assoc., Nov., 1899. Annals of Surgery, 1899, p. 409.
11. Depaul: Jour. de Chirurgie, 1845.
12. Doyen: Technique Chirurgicale, pp. 129-133. Revue de Therapeut. Med.-Chirurg., Jan. 15, '98, vol. xlv.
13. Tuffier: Société de Biologie, Nov. 21, 1896. Bull. et Mem. Soc. Chirurgie, Feb., 1897.

THE TREATMENT OF EMPYEMA.*

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The average treatment of empyema is still far from satisfactory and decidedly behind the present state of surgical science. Tardy diagnosis, inefficient drainage and slovenly after-treatment are the most frequent causes of failure, retarded convalescence and great deformity, results which, though much less frequent than formerly, are not seldom encountered at this late day. The operative treatment of the disease is too often undertaken by those unfamiliar with modern surgical methods. It is high time that a greater respect for the chest should be impressed upon practitioners who appear to regard the treatment of pleural suppurations lightly, and as a fair field for any one able to insert a tube and diligently use a syringe.

The rational treatment of suppurating pleurisies is simple and well known to competent surgeons. Early diagnosis, prompt and efficient drainage, and aseptic after-treatment summarize the whole matter. It is only in the details of technique that discussion is likely to arise and further improvement in methods is to be sought.

EARLY DIAGNOSIS.

Prompt recognition and adequate drainage of the purulent effusion minimizes ruptures into bronchi, systemic infection, loss of lung expansion and pleural thickening. The degree to which the collapsed lung recovers itself depends largely upon the density of the visceral pleura and upon the length of time during which the lung has been compressed. Pulmonic sclerosis and pleural thickening are the chief causes of difficulty in obliterating these cavities. Hence, while there are other causes of tardy or imperfect lung expansion, late diagnosis is one of the most serious and frequent, and one which very moderate skill and diligence ought to almost wholly remove. Perhaps the most excusable delay occurs in certain empyemas developing with or closely following pneumonia, but the abnormal course of events should sufficiently arouse the attendant's suspicions to lead to the use of the exploring needle before many days have passed, even in the most deceptive cases. In any case of thoracic dulness open to doubt, so safe, certain and easy a means of diagnosis as aseptic needling should not long be delayed.

Having early recognized the presence of a suppurating pleurisy, by the needle, a bacterial diagnosis of the variety of the infection is exceedingly desirable. However, pleural suppurations are in practice so generally due to mixed or virulent infections, that serious errors in treatment are not likely to follow its omission in the hands of experienced clinicians to whom the physical properties of the exudate are ordinarily sufficiently characteristic for practical purposes.

EFFICIENT DRAINAGE.

A pleural suppuration being recognized, all the world has agreed that it should be removed; but how and where, have been much discussed. Before the era of aseptic surgery and bacteriology a great variety of methods were alternately used, abandoned and resumed. Puncture with the trochar, aspiration, intercostal incision, puncture and injection of antiseptics, continuous irrigation, etc., were alternately lauded and rejected. Ingenious tubes, complicated instruments and theoretical appliances were proposed. Indeed, the practical surgeon must still be astounded at the antiquated assertions and loose advice still prevalent in many textbooks. At present we know there are empyemas and empyemas. Certain benign infections are easily cured by means wholly inefficient in others. In our present light the indications for rational treatment appear to be clear and fairly definitely established. A very few yield to paracentesis, and a certain other few are, perhaps, best treated expectantly so far as operation is concerned. It is also well known that certain benign effusions may be successfully drained by simple intercostal incision without rib resection, especially in children, and yet this operation is rarely advisable. Thus, the normal procedure for acute empyema is thoracotomy with resection of a rib. This should be the rule, because it alone is adequate to the best treatment of the vast majority of cases, and because skilfully done it is scarcely more difficult or dangerous *per se* than the less efficient drainage of simple intercostal incision.

The drainage opening should be large enough to allow of the removal of all clots and débris, to admit of careful examination of the cavity, even in some cases to allow of inspection by reflected light, and to remain thoroughly open until the cavity under ordinary circumstances may be expected to close. To these ends it is well to resect 6 centimeters of a rib, which admits of the introduction of three fingers. Personally, in certain cases where the conditions found indicate that a very prolonged drainage will be necessary, I occasionally resect two ribs, simply with the idea of establishing a lasting free drainage and keeping the cavity under inspection during its closure. This is, of course, unnecessary in simple acute cases. In my experience, especially in the past, the drainage opening is made too small ten times where it is once made unnecessarily large. The difference in traumatism between making a small opening and one admitting three fingers and giving full command of the cavity is little, but the difference in efficiency is great. I would make three exceptions to this rule of rib resection as the normal procedure in acute empyemas:

1. In pure pneumococcic pleurisies, thoracentesis may be tried, and it not rarely succeeds. This variety is more frequent in childhood—hence, the frequently reported cases by aspiration and small drainage in children. This fact, together with the greater intercostal space in these subjects, has led to a disposition to view the indications for treatment of empyema in children as differing from that of adults, a contention without much foundation, and unless it be in very young infants, rib resection should be the rule. I have met with only two cases of pure pneumococcic pleurisy in adults. In one, a young man, a single aspiration of three pints of a light white pus was followed by prompt and complete cure. When the history of the case and the appearance of the exudate point to a probable pure pneumococcic infection, drainage should be delayed, and if bacterial examination confirms the suspicion, even a second, possibly a third evacuation by the aspirator may be tried before opening the chest.

2. There are certain pure tuberculous pleurisies in which drainage should be delayed until the advent of mixed infection. Tuberculous pleurisies are for the most part serous, until mixed infection occurs, when, as a rule, they are more or less benefited by free drainage. However, there are several varieties of tubercu-

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lous pleurisies as well as suppurating pleurisies in tuberculous patients, and it is a matter of good judgment rather than of set rules when to operate and when not. Briefly stated, I think the rule should be when the exudate withdrawn by the exploring needle is apparently sterile, or when there is little rise of temperature or evidence of sepsis, it should be left alone, or at most reduced somewhat from time to time by aspiration in case subjective symptoms arise, or the accumulation is increasing. This is especially the case in hemorrhagic tubercular effusions.

3. In large and double effusions, gradual evacuation by paracentesis is advisable as a preliminary measure, the rib resection being delayed a few hours. Or in double empyemas the rib resection may be made on one side and the siphon drainage of Bülau may be simultaneously instituted on the other.

ANESTHESIA.

In most cases the brief and light chloroform narcosis required for a rib resection is well borne, but if the general or cardiac conditions seem to contra-indicate chloroform, the operation, if dexterously performed, may be made with but little discomfort under local anesthesia (Schleich). Ether should not be used.

In operating under general anesthesia, the position on the table is of importance. In large effusions, and in cases which have already ruptured into a bronchus, the patient ought not to be placed upon the sound side; hence, a high table with the involved side drawn well over the edge, aids greatly in making a well-placed drainage.

As to the technique of the very simple operation of rib resection, there is but one point that occurs to me worth mentioning. Good bone forceps are undoubtedly the most handy instruments for section of the bone, but they sometimes disagreeably crush and fissure the rib. A much neater and smoother section is made by a Gigli's wire saw. Possibly the occasional neuralgias and some other rare sequelæ of rib resection might be avoided by this certainly more elegant method of resection.

LOCATION OF THE DRAINAGE.

In draining the pleural cavity the opening should be placed at the lower and posterior part of the collection, or rather at the point which is to become such as the cavity shrinks. Leaving out of consideration interlobular and supra-diaphragmatic collections, intra-pleural effusions vary considerably in their location in different cases, hence to place the drainage opening at any set place on the chest is manifestly absurd. It is doubtless a fact that purulent effusions most frequently occupy the lower and posterior portion of the pleural cavity; hence, in the majority of cases of empyema, the eighth rib, well back, just outside the angle of the scapula, is best chosen.

In the mid-axillary line and anterior to it the muscular covering is less thick than upon the latero-posterior aspect of the chest, and this naturally inclines the operator to choose a location which is often ill-placed. The usual dorsal position of the patient on the operating table further increases the difficulty of operating posterior to the mid-axillary line. An opening in this plane is quite sufficient for certain empyemas, but if the case is a bad one, i. e., a virulent infection, and the cavity large, I have often observed that the residual cavity, after a few days or weeks of drainage, is most often found to be upward and backward from openings placed low and forward. Hence, in most cases, a drainage placed moderately low and well posteriorly upon the unevacuated cavity proves most satisfactory during the latter course of the treatment. Indeed, in certain cases, the rib is best resected as far back as the angle. In at least three cases I have observed moderate-sized cavities located upwards and backwards under the scapula which could only be drained by such posterior-lateral incisions. In many cases drained by others or by myself, I have found after a short time that the opening came to be situated below and in front of the cavity, leading to the necessity of reopening further backward and upward. The rule ought to be to place the opening moderately low and well posteriorly upon the cavity. If it be too low, the diaphragm in certain cases soon rises over it and the drainage is soon imperfect and troublesome. I have never seen it placed too far backwards for the best results, but many times too far forwards. However, as a high posterior rib resection is a rather more formidable operation in certain cases, it is well to resect the eighth rib in the mid-axillary line as a primary measure, and some weeks later, if necessary, make a second higher and more posterior resection if required.

OF IRRIGATIONS.

After resecting the rib, the first opening through the pleura should be small so that a large part of the effusion may drain away slowly. When this has taken place the pleural incision is increased correspondingly to the piece of rib removed. Through this copious opening the cavity may be thoroughly cleansed by wiping out with bits of gauze on a long forceps. In case the condition of the patient demands it, this may be deferred to a subsequent time. Immediate irrigation of the cavity is often objectionable and always less efficacious than wiping out with gauze. In my opinion lavage of these cavities has a very limited field of usefulness. Two things are quite clear: 1, with the chest opened as freely as here indicated, frequent irrigations are not necessary; 2, the injection of empyemic cavities through small openings is decidedly dangerous. Sudden deaths, syncope, embolism, paralysis, various nervous phenomena, etc., which have been long observed and much discussed, are undoubtedly the most striking, but not the most frequent accidents of irrigation. Rises of temperature and various septic phenomena and complications very frequently follow too diligent lavage of these cavities. The smaller the opening and the more forcible the injection, the greater the liability to these various accidents. I have never seen any serious accident follow the gentle lavage of freely opened cavities, but I have come to believe that they do better with a minimum of irrigating. The idea of stamping out infection by the use of antiseptic washes is no longer rational. A few days after the free opening of a cavity peroxid may occasionally be poured over its walls or applied with a swab of cotton, or it may be washed out with warm bland solution if desired. The indications usually given for lavage are: 1, abundant purulent secretion; 2, fetid secretion; 3, if the fever persists or reappears after a period of apyrexia. It may surely be debated whether lavage avails anything against either of these indications. I am certain that it is a frequent cause of the latter condition, i. e., persistence or reappearance of the fever, and I have repeatedly known the temperature to subside when lavage was stopped. When a cavity can not be kept clean without much lavage, it usually needs to be reopened more freely. It is better to devote greater

care to external cleansing of the wound and skin, and to the occlusion dressing and less to the diligent squirting of quarts of fluid into these cavities. When the secretions increase or become foul, the cavity ceases to shrink, and the opening has become small, free reopening is usually followed by general and local improvement, whereas the most diligent syringing shows little if any beneficial results.

DRAINAGE TUBES.

With a large opening of the chest the chief object of the drain is to keep the wound from closing. When the bottom has been taken out of the reservoir, draining away of the secretion can scarcely be prevented. With a small hole entering the cavity at some point on its external wall, often with clots and débris retained, it can scarcely be kept clean with an irritating drainage tube. For the purpose of keeping the wound open and its lips in a good healthy condition, copious gauze drainage is preferable in most cases, at least in the early after-treatment. When the amount of secretion is great, rubber tubes surrounded by gauze may be preferable. There are many objections to exclusively tube drainage in these cases: 1. The wound is encouraged to close down rapidly and the command over the cavity by direct inspection is lost. 2. The pressure of the tube exercises a bad influence on the soft tissues. The tract occupied by a tube is usually in an unhealthy condition, in marked contrast to that of a large wound held open by sterile and iodoform gauze. There are doubtless stages and conditions in the course of the treatment of empyemas in which tubes are very useful, but I find myself using them less and less. When desirable, two large soft-rubber tubes placed side by side may be used. They should be of the size of the thumb, short, and not press upon the pleura. Great care is necessary in their daily sterilization, and some contrivance to secure against their loss in the chest must be instituted. When small openings were in vogue, nearly half the cases coming under my observation were found to have lost tubes in the chest. The many ingeniously devised drainage tubes are absolutely superfluous, to say the least. Valvular drainage tubes, as proposed by Williams and others, with the idea of expanding the lung during inspiration, are certainly not necessary and of doubtful efficiency. In empyema when the chest is opened the collapsed organ is expanded by air from the sound lung during expiration and in coughing. And this force is apparently much more effective than inspiratory efforts with the chest closed by a valve. If tubes are to be used for chest drainage none are better than those manufactured on the spot from sterile pure soft-rubber tubing, but personally I prefer gauze drainage for the most part and use tube drainage only in stages and cases where it seems more expedient. Many cases may be drained all through by gauze. More frequently after a time, when the cavity has become small, tubes are substituted with advantage. At times it is necessary to drain a considerable cavity through a small opening on account of the condition of the patient, in which case tubes are quite indispensable, but as a rule such a cavity needs a freer opening.

DRESSINGS AND AFTER-CARE.

The dressing of empyema cases is often very careless. These patients being ambulant most of the time, are often allowed to shift for themselves, and the after-treatment is anything but aseptic. Strictly speaking, a careful aseptic occlusion dressing ought to be maintained throughout the treatment from the first opening to the closure of the cavity. How rarely this is achieved we all know. While the dangers of seriously reinfecting an old granulating cavity are not great, such accidents may often be observed in the most chronic cases and doubtless sometimes occur in the early stages of acute cases, when a comparatively benign infection is rendered more virulent by the entrance of infection from without. Patients and attendants should be more impressed with the necessity for a rigid aseptic after-treatment of these cases. While the discharge is free the dressings should be changed as often as they become saturated, and during the whole after-treatment at least once a day.

Besides the general attention directed to the constitution and the local care of the wound, a third matter ought to receive constant consideration, viz., the progress of the expansion of the collapsed lung. During the early days of the after-treatment, cough tends to this end; hence, it should not be too far subdued by narcotics. If, after the patient has had time to recuperate, it is found that the lung is slow in expanding, means should be instituted to assist it. Until the cavity has nearly closed, forced expiration is the most efficient and practical means at our disposal, and the patient should be instructed in methodical forced expiratory movements with closed glottis. The suggestion of Koenig to require such patients to blow up air pillows several times daily is practical.

THE PROGNOSIS.

The prognosis as regards life naturally depends upon the nature and extent of the infection, and the resistance of the individual. As regards closure of the cavity, it may be said, I think, that acute empyemas, promptly recognized, freely and adequately drained, and aseptically treated, as a rule close in from three to twelve weeks. As the treatment of empyema becomes more rational, thorough and scientific, incurable fistulæ and cavities become more rare; in fact, the exception.

CHRONIC EMPYEMA.

However, some cases for various reasons become chronic, and the cavities are closed only with difficulty and after months of invalidism, and the performance of more or less extensive plastic operations. In a few, owing to feeble general health or tuberculosis, the final closure of a small sinus may be indefinitely postponed. Plastic operations should not be undertaken until the cavity has been reduced as far as possible by free drainage, general improvement of health and respiratory gymnastics. It is usually several months from the time of the primary opening before shrinkage of the cavity comes to an absolute standstill, when, if the general state warrants, thoracoplasty may be undertaken. When after long drainage the lung has expanded to the fullest extent possible, the mediastinum has been displaced, the diaphragm has risen, and the chest wall has fallen in until the ribs are in contact and a cavity or sinus still remains, it is evident that some other principle than drainage must be called into action if the cavity is to be finally closed. The idea of the surgeons who first attempted to close these chronic cavities seems to have been that closure is chiefly prevented by the rigidity of the ribs; hence, Estlander in 1877 proposed to mobilize the thoracic wall by resecting that portion of the ribs covering the cavity. In practice the cause of failure of most of these cavities to close is to be found rather in the pleura than in the ribs. The walls of these persistent cavities and fistulæ become indolent and quite

analogous to the edges of certain old indolent ulcers, and removal of the superimposed ribs alone rarely proves entirely successful in their complete closure. Hence, this type of thoracoplasty has been superseded by the Schede type of operation, in which the whole chest wall, save the skin, is removed over the cavity. Of late years cases requiring extensive plastic operations are much less frequent than ten or fifteen years ago, but in five cases during the past six years I have found it necessary to remove more or less extensive portions of the chest wall, and secured complete and prompt closure in such instance, whereas ten or fifteen years ago a much larger number of operations of the Estlander type were observed, in the majority of which sinuses remained as long as the cases were followed. Thus, with prompt and efficient treatment of acute empyemas, chronic cavities and fistulæ are rare, and these may with few exceptions be closed fairly promptly by thoracoplasty. When the general state is very feeble, when amyloid disease is advanced, when the cavity is enormous, failure is probable, but there are few absolute contra-indications to a well-timed attempt to close these chronic cavities. Tuberculosis is unfavorable, but by no means an absolute contra-indication.

DISCUSSION ON PAPERS OF DRS. WILLARD AND DUNN.

DR. A. C. BERNAYS, St. Louis—Pneumotomy and pneumectomy are the operations which deal with tuberculosis—first and last and all the time with tuberculosis, excepting, perhaps, a few cases where a surgeon would be called early enough to render aid in a traumatism from a gunshot wound or a stab in the chest. We are gradually encroaching on the domain of the medical men so much that soon our fellows may not have their lungs left. I really believe the time is at hand when we are going to attack the ravages of tuberculosis in the lungs with our surgical technic, and I believe we are going to do it successfully in many cases. In order not to discourage our efforts, we should carefully select suitable cases. It is a fact that pure infection by tubercle can recover spontaneously or by means of dietetic and climatic treatment. We all know that to be a fact, because we have all examined the sputa of tubercular patients and have seen them recover from dietetic and climatic treatment. In those cases prognosis is favorable as long as there is no mixed infection. As long as the patient has only the growth of tubercular bacilli in his lungs he may recover spontaneously, but in most cases there will soon be a mixed infection; that is what kills and that is what I think we can attack surgically. When there has been a secondary infection of the tuberculous patient by staphylococcus, streptococcus, colon bacillus, and other pathogenic microbes, or some of the saprophytic microbes, then our treatment must aim at their exclusion. Cavities in the lung are the points of attack. In considering their treatment, the question is simply this: Is the danger of the operation less than the expected benefit? Then the procedure is justified even if it is not a radical treatment. We must select cases that are not beyond the stage where recuperation is possible, just as we do in carcinoma. Cases in which a cavity in the lungs is the most prominent danger are rare, but if we can only bring one in a hundred of these unfortunates back to health, the operation of pneumotomy must appear as a justifiable operation. Just before I came here I had the superintendent of a public hospital send for me to see ten cases of death from consumption and in those ten cases I, with the aid of my assistants, went to the dead house and removed all of the soft parts over the top of the lungs on both sides, removing the whole clavicle, the first, second, and third ribs and then examined the tops of both lungs; the most interesting thing I found was that I could peel out with an elevator and with my fingers, the apices of the lung on both sides in eight out of ten cases without causing the pneumothorax. It was possible, by a blunt instrument, and with the fingers to peel out the upper part of the lung, in eight out of ten cases so that the lower part of the pleural cavity was not opened and there was no chance of producing a pneumothorax. While I was doing that post-mortem work, of course I had in view an operation which I could do upon a living patient and I believe that the best operation to be done in a case of that kind will be the following: Make an incision, beginning at the margin of the sternum and running through the pectoralis major muscle 5½ inches laterally in a straight line down to the second rib. Some French surgeons have advised making an incision over the first rib, but I think that is a mistake. The incision over the second rib gives much more room and is easier done. By means of the finger or a blunt instrument the pectoralis major muscle and soft parts are scraped off the ribs upwards and downwards. Then, by putting in a broad retractor, such as we use in the abdominal cavity in each side, the edges can be spread out and the second rib exposed for 5 inches. Another retractor placed into the lateral edge of the wound, will rest upon the axillary vessels and brachial plexus, but it will completely protect them so that, with the greatest ease, the second rib can be resected. I note that whenever I made a cut through the cartilage, the rib would stand out and then it is only necessary to use the wire saw or bone forceps, or even only to pull upon the medial end until it breaks off near its angle. All you have to do is to take hold of the second rib and break it off; it will break at its weakest point near the axillary line. It is not necessary to use bone forceps, but the second rib is taken hold of firmly and broken off, leaving not a ragged, but always a transverse break. You will have before you the white, almost bloodless, cicatricial-looking fibrous layer of tissue, the two layers of pleura having adhered, and you will find it not only difficult but requiring force with your fingers to loosen the cupola—the apex of the lung—out of its adhesions. Having loosened it clear around behind, on the sides and in front, then the finger will easily detect the fluctuation of the cavity; this cavity I would not open with the Pacquelin cautery, but with a knife. There is little danger of hemorrhage in the peripheral part of the lung. The top part particularly is not supplied with large arteries. The blood in them is under a low pressure and you can push your knife, or if you please, if you are in the tentative stage of surgery, you can push a thick trocar in there until you find the pus cavity. Having found the pus cavity, it should be opened by the method of Mr. Hilton. You remember he gave a method for the general practitioner to open abscesses, a method which avoids hemorrhage. After making the cut, press the dressing forceps into the cut, and enlarge the opening by separating the handles of the dressing forceps. In that way the abscess cavity can be widely opened and can be treated in any way that the operator may choose. In these cases that I examined very carefully I found that on the inside of the cavity you could see large blood vessels covered merely by a little pyogenic membrane, ready to burst. I found this in all the cavities I opened. Whether it would be well to tie those vessels with catgut or silk, I do not know. In this department of surgery we depend largely upon our theoretical studies. It would be a perfectly safe operation if in such a case as that you did not produce a pneumothorax but succeeded in getting into a cavity, to treat that part of the human body exactly as you would treat a case of pyonephrosis, appendiceal abscess, or abscess of the liver. The fever is caused by the pus, not by the tubercle bacilli, but by the secondary infection with pyogenic bacteria. You can drain the cavities and the patient's temperature will become normal rapidly. If he has a cavity also on the other side, it will not become normal until you open the other side. Dr. Willard covered the ground of treatment of foreign bodies in the air passages completely.

The first and important statement Dr. Dunn made was that the treatment of empyema depends upon microscopic findings in the fluid that have been brought out by the exploring needle. The condition demands that a microscopic examination must be made and the treatment must be governed by the findings of what is withdrawn with the exploring needle. One point that I never heard before was the use of the wire saw for the

purpose of cutting out the ribs. I shall undoubtedly adopt that plan, for that will prevent ragged and jagged edges. In regard to irrigation, I find myself absolutely in agreement and will only mention it in order to emphasize my position. I used to be a great irrigator, but I have absolutely abandoned irrigation, both in empyema cases and abscess of the liver, or in appendiceal or pelvic abscesses of any kind. It is a principle of surgery that where we have complete and free drainage we don't need irrigation. After drainage of an abscess, if fever arises, you can not cure that fever permanently by irrigation. What is indicated is to make the hole larger or make another hole in another place.

Dr. J. H. Barbat, San Francisco—I have been experimenting on dogs during the past year in the endeavor to solve some of the problems in thoracic surgery. I was unable to obtain any of the insufflation apparatus, and so had one constructed, which worked very successfully. It consists of a bellows with a spring, which can be adjusted so as to regulate the amount of air in each insufflation. The air is passed through a wash bottle containing hot water, so as to remove all dust and also warm it, thereby lessening the possibility of irritating the bronchial mucous membrane. A second bottle is provided with a two-way cock, which allows us to pass the air from the bellows either direct to the lungs, or to pass it through chloroform or ether, thus regulating the amount of anesthetic perfectly. I found in my experiments that it was easier in the dog to use a tracheotomy tube than an O'Dwyer tube. By anesthetizing the dog first, the tracheotomy tube was easily introduced, and then the insufflation and anesthetic could be kept up during the operation with comparative ease. To enter the chest cavity I make an osteoplastic flap by cutting through the requisite number of ribs near their attachment to the costal cartilages with a modified gardener's pruning shear, the cutting blade of which is thin and sharp, thus avoiding crushing the ribs. The next step consists in passing a full curved needle armed with heavy silk through the skin and around the rib, being careful to avoid including the intercostal vessels and nerve, at a point three or four inches back of the first cut. A Gigli-Haertel saw is then pulled through by means of the silk, and with two or three strokes of the saw the rib is weakened. All the ribs previously cut being treated in the same way, it is easy to turn back a large flap, without having seriously interfered with the circulation, which allows us to work with freedom on the contents of the chest cavity. In resecting the lung the electrohemostatic forceps of Skene may be used instead of the angiotribe, the only disadvantage being that it is necessary to carry the electrical apparatus with you while the angiotribe is complete in itself. In resecting a rib for empyema, time is an important factor, and I have found that the operation may be expedited by using Doyen's periosteotome, which consists of a piece of narrow half-round steel, one end of which is bent in the shape of the letter C and set at right angles to the shank. After cutting through the soft parts and periosteum with one stroke of the knife, the free end of the periosteotome is passed under the periosteum and worked up over the top of the rib, then down behind, avoiding the vessels and nerve, then out in front of the lower border of the rib. The shape of the instrument is such that when it is in position it fits the rib closely and all that is necessary to do is to move it back and forth a few times to loosen the periosteum perfectly, then with the sharp cutting shears the rib is divided, and the whole operation completed in from three to five minutes.

Dr. W. Jepson, Sioux City—In connection with the subject presented by Dr. Willard, I believe that there are few subjects in the whole domain of surgery where it is so essential that a clear conception should exist regarding what to do and how to do it, as when treating foreign bodies in the air passages. The statistics as collected by Gross, Weist and others, indicate that about 24 per cent. die when not operated upon. This is certainly a large mortality and must place this condition among the graver accidents; however, the saddest fact revealed by statistics covering a large number of cases is that more die when operated on than when not. Thus, of 1000 cases collected by Weist in 1878 or 1880, it is shown that the mortality was increased 4 per cent. by the employment of operative measures for the removal of the foreign body. Notwithstanding the sad results of operative interference in these cases, I say that Gross uttered an axiom when he, some forty-five years ago, stated that when a foreign body existed in the air passages, the trachea should be opened to facilitate its removal. This opinion was based upon his own personal experience, which showed that 17 per cent. more recovered when operated upon than when left alone. From a personal experience of 16 cases, 15 of which were operated upon with recovery in each instance, I advocate that, with few exceptions, where a foreign body has gained access to the trachea or bronchi, the trachea should be opened as soon as possible to facilitate its removal. It was said that the symptoms were often indefinite and vague. How true this is we quickly learn after even a limited experience with these cases; the phenomena occasioned by their presence may simulate those occasioned by any of the various affections of the respiratory tract, and it therefore behooves us not to overlook their presence. I seriously doubt if the employment of emetics, sternutaments, or inverting the patient and slapping upon the back, or other measures calculated to increase the expiratory force with a view of dislodging and expelling the body, are proper measures to employ. I recognize that now and then it may possibly be fruitful of the object aimed at, yet how often does it not fail and possibly with dire results. The upper third of the larynx is supplied by the superior laryngeal nerve, irritation of which may, through its relationship with vagus, lead to cardiac and respiratory inhibition, which may be most serious. We see this fact unconsciously recognized on the part of parents of children having seeds of corn, etc., in their air passages, by maintaining them in an upright posture so that the gravity of the foreign body keeps it out of the larynx, thus avoiding those violent attacks of coughing and choking.

The question of greatest importance pertains to the procedure of removing the foreign body after the trachea is opened. Foreign bodies in the air passages may be divided into two classes: 1, those which are movable within the lumen of the trachea or bronchi, bodies which are generally possessed of a more or less smooth surface, as seeds of corn, beans, coffee beans, etc.; 2, those which have become fixed in some part of the air passages, bodies which are generally irregular in shape, as tacks, pins, sand-burs, etc. Of course, a smooth body may become impacted in the larynx or either of the bronchi. After opening the trachea we readily recognize by the character of the breathing as to whether the body is distal or proximal, and are thus guided. If in the larynx, its removal can generally readily be accomplished by a suitable pair of forceps. If the body is located in the lower part of the trachea or a bronchus, especially if the same be hard and smooth as in the instance of many seeds, I doubt if we are warranted in making any attempt to grasp such a body with any forceps which we now possess. We would be much more likely to force it on down into the constantly diminishing lumen of a bronchi and thus impact it, making its subsequent removal very difficult if not impossible. The resistance offered by the trachea or bronchus to smooth bodies is not great until they are impacted, but it is necessary to grasp these bodies. All that it is necessary to do is to loosen them if impacted, when the expiratory current of air will carry them to the tracheal opening, and, if the trachea be slightly angulated by means of a pair of catch forceps or a loop of thread in each edge of the tracheal wound, the body will be ejected, or brought to the wound where it may be readily grasped. To loosen such bodies when fixed or impacted, no more efficient means can be employed, with possibly few exceptions, than that simple expedient of taking two or three strands of fine steel wire and twisting them together, leaving loops which may be passed beyond the object to loosen it on the withdrawal of the loops. A wire with a hook on its end and a half-circle higher up to keep the hook in the lumen of the passage, may at times be used to much advantage. No doubt the coughing excited

by the passing of the wire loops is a potent factor in many instances in loosening the foreign body. I concur in the view expressed by Dr. Willard that the simple opening of the trachea can not add to the risks of the patient; therefore, the large mortality in these cases, as shown by statistics quoted, must be due to other causes; probably because operative procedures were instituted too late or unwarranted instrumentation was employed and injury resulted.

DR. JACOB FRANK, Chicago—I have had considerable experience with two unpublished cases of lung surgery, and I have found from these and from experiments on dogs, that lung surgery is not so easy as most speakers would lead us to believe, with the exception of Dr. Willard. The first case was that of an abscess in the upper part of the right lung. I should say that it was an abscess of the lung, because the patient under anesthesia had frothy blood coming from his mouth. That is one of the signs and also one of the dangers in operations on the lung which has not been mentioned here, that is, drowning of the patient in his own blood. I worked my way down to it by resecting the clavicle and part of the first rib before coming to the abscess. This patient made a recovery. We introduced a syringe with a catheter, made suction, and the patient recovered. The second case that I had was that of a little boy who periodically would vomit from a quarter to a half a glass of pus. It could be distinctly determined on percussion when the abscess cavity was full and when it was empty. I thought it best to operate when the abscess cavity was full, but unfortunately when he was taking the anesthesia he vomited the pus. I resected the ribs and poked around with a needle twenty or thirty times until the blood came out of the boy's mouth and he was almost suffocated. I had the cavity soon cleared of the blood, and then worked my way with an artery forceps to find the cavity, and I failed. I am sure that I made enough laceration of the lung to find it, and can not say why I failed. The boy died. In lung surgery we stand to-day where surgery did twenty years ago in tuberculosis of the joints, first the resections and then afterwards getting to the curettement. I can not see the benefit of resection or excising any portion of a tubercular lung, unless we are sure there are not any tubercles a quarter or an eighth of an inch just beyond the border of the removed part, and I do not think that surgery of the lungs will ever become prominent—that is, excision for tuberculosis—unless we have some means to determine that there are no tubercles in any other part of the lungs. There is a difference whether we have a deep abscess of the lung to operate on without any adhesions of the pleura and the chest walls, or whether it is superficial. Merely an abscess, where there are adhesions already, is not more difficult to open than any other abscess.

DR. LEMOYNE WILLS, Los Angeles—There is much opposition to anything in the way of draining superficial cavities, or any operating on the chest until it is too late to do good. It is for the profession to overcome that opposition and not to allow their patients to go on in a septic, dying condition and then send them away to Arizona and New Mexico and Southern California, allowing the responsibility to be shifted to other men's shoulders and obliging the latter to sign the death certificate. That is the condition in which we get them. If you would diagnose your cases properly, treat them properly, as in operations on the brain and abdominal cavity, there would be more cases cured and fewer suffering consumptives in the last stages sent West to die. I am agreed with Dr. Frank that this is a matter of diagnosis. It is a matter of great care in the selection of your cases, but if you have a case almost moribund, with tubercle bacilli in sputum and a single large cavity in the posterior lower lobe, and can drain it, and if the man gets well and goes back to active life at his trade and puts on 75 pounds of flesh, that is certainly hopeful for the future of such operative treatment. If your patient is willing to submit to operation, knowing the dangers, the surgeon should be willing to take the risk even if as low a percentage as one in a hundred is cured.

DR. C. H. NORRED, Minneapolis—I simply want to relate a case, not operated upon, that made a brilliant recovery. In 1869 a child between 2 and 3 years of age, in running, drew a peanut kernel into the bifurcation. At that time we were not operating upon the lungs, and I treated the case expectantly. The patient, however, developed a typhoid pneumonia, and I called to my assistance Drs. Burrough and Henry, of Springfield, Ill. They assured me that my patient was beyond help. I noticed that in the paroxysms of coughing the child would get the peanut kernel up just so far and a spasmodic contraction would take place, everything would stop and cease and a desperate strangulation would result. I suggested that we relax the patient most completely, then give the child an emetic. The child was given morphia; we provoked vomiting and secured in a bowl the peanut. We finally succeeded in handling the complications and the child recovered.

DR. W. W. KEEN, Philadelphia—Some time since I had occasion to attempt to reach a cavity in the lung that was filled with pus, and I made the incision at the point that was indicated by my medical colleague after percussion of the lung, between the second and third ribs on the right side. I made my incision parallel to the ribs for about two inches; then carefully dissecting the muscles, separating them as I went down, with a cut and separation, I reached the pleura, which was very easily recognized. The muscles were very easily separated from the pleura. I could see the excursion of the lung up and down as it fell away to a certain extent from the surface. As there were no adhesions it was clear that it would be unsafe to puncture the lungs if there was any pus there. Accordingly, when the lung was at the moment of rest between inspiration and expiration, I took a Hagedorn needle and passed it quickly through the lung itself. Two stitches secured the lung in position. I then packed the wound lightly with iodoform gauze and closed it with two stitches. After three days I reopened the wound, removed the packing and had the gratification of finding a perfectly adherent lung.

This led me still further some time since, in a case that I reported at the American Surgical Association. It was the case of a woman who had sarcoma of the chest wall, reaching from the outer border of the breast nearly all the way back to the vertebral column, and I was obliged to remove a portion of the chest wall, into which my hand would precisely fit. When this was removed the lung collapsed. I had the Fell-O'Dwyer apparatus ready for use, but fortunately in this case there was very little embarrassment of the respiration as a result of the collapse of the lung. I then introduced my left hand and seized the lung bodily—it was not invaded by the tumor—drew it forward and with a long thread of catgut and a Hagedorn needle, sutured the lung completely around the opening by a continuous suture, with a view of preventing, as far as possible, pneumothorax. Then, I replaced the flap of skin and sutured it and sealed with iodoform and collodion. The patient made a fair recovery from the operation, but had a continued fever, which led me to have a blood examination made, and I found the staphylococcus infection in the blood. This was met by the use of the antistreptococcus serum, and the patient made a complete and very satisfactory recovery. The point I wish to emphasize is the means of obtaining adhesions where none exist so that we can carry out later in a punctured lung that which may be necessary, and secondly the safety even of a very large suture of the lung tissue to the chest wall, either as in the first case locally, or, as in the second, where there is a very large area in its surface.

DR. W. J. MEANS, Columbus—In the last two years I have had several cases of chest and lung troubles on which I operated. One of these cases demonstrated the possibility of recovery after a fearful gunshot wound penetrating the chest and producing extensive laceration of the lung. A boy, 16 years old, was out hunting with an old-fashioned muzzle-loading shotgun. It was accidentally discharged and the charge entered the chest below the axilla. The sixth and seventh ribs were broken, and the middle and lower lobes of the lung lacerated. The pleural cavity, when I saw him, was largely distended with blood clots. The opening was enlarged so that I could introduce my hand. When the débris was removed there was a very decided collapse. For a few minutes it looked

as though death was imminent. To control the hemorrhage I packed the cavity with iodoform gauze; several yards were used. The heart soon became stronger and the respirations more rhythmical and full. The packing was removed forty-eight hours later, when the same alarming symptoms appeared, and disappeared on repacking the cavity. This phenomenon was present at every removal of the packing for some two weeks. This seems to have been a practical demonstration of the physiologic principle of the effects of destroying the equilibrium in the viscera of the chest. I recall another case illustrating the difficulty in the way of reaching an abscess cavity in the lung. The location of the abscess had been defined by an expert diagnostician. An opening was made in the chest wall corresponding with the supposed abscess. The pleural surfaces were found adherent, but no cavity. The patient had been expectorating an offensive pus for some time. The lung was explored in different directions, but no cavity could be located. The lung tissue at the point of opening was diseased and undergoing degeneration. A large opening was made through the chest wall and drainage established into the diseased lung substance. At intervals of forty-eight hours the diseased area was injected with iodoform emulsion. The patient recovered from the operation, but died four or five months later. I mention this to illustrate the difficulty in locating a cavity, and the fact that local treatment of tubercular areas of the lung will not always control the disease.

DR. DE FOREST WILLARD, in reply—When the foreign body is not removed septic pneumonia frequently results with the formation of an abscess. Such an abscess should be opened and drained. Adhesions can be speedily produced between the two walls of the pleura so as to close off the pleural cavity before opening an abscess. With a strongly curved perineal needle with handle, a parallelogram of sutures can be carried around the area and the abscess opened at once, or twenty-four hours later. The same method may be employed in opening abscesses in the liver through the chest wall. A rib should first be resected subperiosteally, then a small amount of air should be allowed to enter the pleural cavity so as to permit the lung to recede slightly. The outer surface of the pleura and the diaphragmatic layer should then be sutured as above described, after which the liver can be reached across the pleural space, and pus evacuated without infecting the pleural cavity.

In regard to resection of the ribs, which has been alluded to this afternoon, I never use the bone forceps, since they are clumsy and are very likely to wound the pleura. With an extra-heavy flat-bladed rongeur forceps a rib can be cut through in a moment, turned back, and lifted out for any distance desired for resection, the second section of the bone being made with the same rongeurs.

THE TREATMENT OF STRABISMUS OTHER THAN OPERATIVE.*

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Important as is the operative treatment of squint, it is less widely applicable than the non-operative treatment. A large proportion of cases may be cured without operation. The number so cured will increase, as it becomes customary to resort to the proper measures, as soon as the deviation is noticed. But in all cases some non-operative treatment is essential to effect a perfect cure. It may not be required only in that small class of operative cases in which binocular vision and normal ocular movements are not hoped for; but in which by operation we may lessen a deformity that we can not wholly remove.

The non-operative treatment for strabismus includes the entire treatment of many cases, and the earliest treatment for all. The indications to be met by it are: 1, to bring about normal innervation of the muscles concerned in ocular movements, by the removal and exclusion of abnormal requirements, and abnormal overflow impulses; 2, to place and keep the eyes, so far as possible, upon the best plane of visual acuteness and an equality of required effort; 3, to eradicate abnormal methods of using the eyes, especially dependence upon one eye to the practical exclusion of the other; 4, to develop normal binocular vision—the method of combining the visual sensations produced by the two eyes; and the habit of employing them both in all ordinary seeing.

For the majority of cases, the time for this treatment begins as soon as the squint is first noticed. The problem of controlling the activities of a young child, and directing them along certain lines, is indeed a difficult one. But since the nerve-muscle apparatus that we are endeavoring to perfect is thoroughly plastic only during the earliest years, these difficulties must be grappled with. In the main, what I have to say in this paper deals with this most important phase of the subject. The modifications advisable for more developed patients can be very briefly indicated.

The aim of the non-operative treatment, as it is the highest aim of the operative treatment of strabismus, is the establishment of binocular vision. Of this there are many grades, beginning with consciousness of impressions made on the two eyes, and extending up to the most perfect appreciation of relative distance and relief. Probably something like binocular vision, something more than mere extension of the field by the squinting eye, exists in many cases of strabismus and may constitute an obstacle to the cure of squint. It is certain that binocular vision is possible even when the vision in one eye is extremely imperfect.

In a patient suffering from high myopia, whose vision with correcting lenses was 4/80 in the right eye and 4/9 partly in the left, were recently encountered all the difficulties of adaptation that one would expect when prescribing lenses of unequal strength for eyes with perfect vision. In a young woman whose vision in the right eye was reduced to counting fingers at 8 feet, while in the left eye it was 4/4 mostly, repeated trials of lenses correcting a part of her anisometropia ended in failure. The disturbances of binocular vision were so marked that she would not wear them. In cases of this kind, the usual tests for binocular vision may bring no response. But we can not doubt that binocular vision of a kind is thoroughly established.

The things to be accomplished in the treatment of strabismus may be classified thus: 1. The removal so far as possible of all obstacles to binocular vision. Under this head falls the operative, with a very important part of the non-operative treatment. 2. The establishment of binocular vision. 3. The perfecting of binocular vision. The latter two are to be effected wholly by the non-operative treatment.

When the patient is able to perceive simultaneously impressions made on the two eyes, binocular vision of some kind exists. The efficiency of the function is at first to be estimated by the ability to keep fused the images, under varied conditions of accommodation and convergence. Mr. C. Worth makes the ability to do

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this the second stage in the development of binocular vision. But I think that some power of maintaining fusion with altered accommodation or convergence begins as soon as there is ability to accomplish real fusion, although at first this power of maintaining fusion is very slight.

The development of the higher grades of binocular visual ability requires almost infinite practice. It may be compared in this respect with the higher grades of ability to play the piano or violin, or the mastery of the most delicate modulations of the voice. It must be acquired through the habitual use of the eyes in daily life, with such aid from glasses or suggested methods as we can give. It will not be reached merely through prescribed special exercises. With such exercises and the apparatus they require, we can only aim to bring about the rudest kind of binocular vision, and start it on the proper lines of development; although, in spite of the limitations of their usefulness, we must consider the most valuable of these appliances and prescribed methods.

Lenses.—In practical importance correcting lenses far outweigh all other measures for the non-operative treatment of squint. They remove the most common and serious obstacles to binocular vision that are removable. Their determination and use is the first step in the treatment of all cases. We can not in this discussion consider all the special indications to be met by lenses. But in every case the lenses should accurately correct all of the ametropia. Such lenses should be worn until the complete cure of the squint, or complete failure to benefit, shows them to be no longer necessary. Failure to rightly employ lenses is the most common cause of failure to cure strabismus. A very large proportion of the failures of glasses to cure strabismus in the earlier years of life must be ascribed to the fact that the glasses do not correct the ametropia. In many of these cases the glasses have been fitted by opticians. But even when prescribed by ophthalmologists of reputation and experience, one can not be sure that they are "correcting" lenses.

CASE 1.—I. A., aged 6, was seen in consultation with a careful surgeon of large experience in ophthalmic work, who had prescribed R. and L. +2.75 spherical. These had been worn about five months without any marked diminution of a high convergent squint, which had during that time changed from intermittent to constant. The correcting lenses required were really

R. +4.50 ⊂ +0.50Cy. ax. 90°.
L. +5.50 ⊂ +0.50Cy. ax. 90°.

The wearing of these promptly checked the squint.

CASE 2.—E. L. H., a girl aged 7, had been noticed to squint when less than 2 years old, and had been promptly placed under the care of an ophthalmologist. She had worn glasses for three or four years. Those she was wearing had been prescribed by an ophthalmologist who had seen her within a few months. After repeated examinations, he had given the opinion that glasses would do nothing more for her. That an operation was necessary; and unless he were allowed to do an operation he would not continue in charge of the case.

The child was wearing
R. +3 S. ⊂ +0.50Cy. ax. 90°.
L. +3 S.
What she really required was
R. +6.50 S. ⊂ +0.50Cy. ax. 105°.
L. +6 S.

These were prescribed and the deviation which had been 30 to 60 centrads promptly disappeared. At the end of six weeks there remained not over 5 centrads of esophoria; and in six months the muscle balance with the lenses on was perfect.

The accurate correction of ametropia being the most important single measure in the treatment of squint, and this being most effective in the earliest stage, it follows that no one who can not measure refraction objectively, no one who can not apply skiascopy with sufficient accuracy to obtain by it the data for prescribing lenses, is competent to treat strabismus.

This sounds like an extreme statement. Judging by old standards of attainment and old methods of treatment it is unduly so. But the experience of the last five years has established a new standard of success in the treatment of convergent strabismus in children, to be attained only by a method of which the foundation is the accurate correction of the refraction, at an age when the patient can give no assistance as to its measurement. In view of this, any milder statement simply falls short of the truth. The total hyperopia must be corrected. Astigmatism or anisometropia of 1 D. or less may constitute a complete bar to the re-establishment, or the renewed development of binocular vision, when the tendency to give up binocular vision has once become manifest. A fault of this kind, that would very rarely cause squint, may have to be corrected before the squint can be cured.

It may seem tedious to dwell so much on this subject of correcting refraction, but to have devoted more than three-fourths of this paper to it would only have been to give it space proportioned to its relative importance; and the cases I have cited illustrate a failure to recognize that importance which I believe is still very common among us.

Use of the Previously Deviating Eye.—In the great majority of cases this is the first point to be effected. Even though both eyes may to some extent be used, if one is distinctly preferred to the other for accurate seeing, the difference in the facility with which they are employed becomes a positive obstacle to the re-establishment of binocular vision. In general, it must be assumed that the fixing eye had originally some advantage over the deviating eye. To this advantage is added the facility acquired by habitual use for weeks, months or years. The advantage that the fixing eye now has is thus very much increased. It will not be removed by a few brief attempts to use the eye that has heretofore deviated. Weeks, months or years of continuous dependence upon the previously deviating eye might fairly be expected to be necessary to overcome such a disadvantage. In view of this, it is surprising what may be gained in this direction by a very moderate use of the poorer eye. But it should be understood that in most cases this using of the worse eye can not possibly be overdone.

The occlusion pad or bandage, which completely excludes the better eye, is the only thing that will serve the purpose, if the vision of the squinting eye is very much reduced. For older persons, it can often be used but a small part of the time, but for very young children it may be kept on almost constantly, removing it only often enough and long enough to ensure the health of the covered eye.

The essentials of such a pad are, that it shall absolutely prevent vision with the covered eye; and that it shall act as little as possible like a poultice. The ordin-

ary roller bandage may be used, but generally some special form arranged with tapes will be found more available. If the child can be watched, a mass of absorbent cotton stuffed behind the correcting lens of the better eye will answer. But usually I find it better to hold the cotton in place by one or two strips of adhesive plaster, as with the simple dressing used after cataract extraction. To avoid the pulling on the skin when the plaster is removed, it may be applied to a piece that is left in contact with the skin continuously. The use of the occlusive pad should be continued until, if this be possible, the vision of the worse eye has so improved that it will be used for fixation when the other eye is kept under a cycloplegic.

The Use of Cycloplegics.—The so-called mydriatics are to be used in this connection for their power to produce cycloplegia, not merely to dilate the pupil. An enlarged pupil is not sufficient evidence that the drug is being used effectively. The slightest reaction of the pupil to light proves that the eye is not completely under the influence of the drug. It is necessary from time to time to test objectively the power of accommodation, or the absence of accommodation, to make sure that the cycloplegia is properly kept up.

In all cases, cycloplegia is required for the determination of the ametropia. It may then be continued in both eyes to prevent the abnormal innervation associated with accommodative effort. In cases of alternating squint, this is sometimes of particular value.

In monolateral squint, however, after the correction of the ametropia, the cycloplegia should more frequently be confined to the better eye. It thus serves as a means of compelling the use of the previously deviating eye. As above indicated, it can only be thus applied for those cases in which the paralysis of accommodation of the fixing eye, the other retaining its accommodation, causes the transfer of the squint. If cycloplegia of the better eye does not accomplish this, we must use the pad. But if it does cause the transfer of fixation, it is a measure superior to the pad, because it is constant in its influence, requires less attention, does not interfere with the health of the eye, and leaves binocular vision possible, under favorable circumstances, if there be a tendency to establish it.

When employed in this way, cycloplegia should be continued until fixation, even at a distance with correcting lenses, is most of the time done with the previously deviating eye, or until all gain in this direction has entirely ceased. The length of time that the mydriatics should be thus employed is somewhat proportioned to the age of the patient, or at least, to the duration of the strabismus. But it will usually extend to several months and may go on to years.

The use of a mydriatic formerly advocated, as a substitute for correcting lenses in children too young to wear glasses, is now a very limited one. Nearly all children old enough to have a decided strabismus, as distinguished from the irregular uncoördinated eye movements of infancy, are old enough to wear glasses. They will wear them without objection if the ametropia be high enough to be of much importance, and the eyes are kept under a mydriatic for a few days after the glasses are put on.

But the mydriatic can not fully replace correcting lenses. It may remove the tendencies associated with excessive effort of accommodation, but it does not bring up the vision of the poorer eye, or place it more nearly on a plane with its fellow, as regards effort necessary for use. It removes an important cause of squint, but it does not, like the correcting lenses, bring about the conditions most favorable to the development of binocular vision.

Exercises for the Development of Binocular Vision.—The first thing aimed at, is to induce the patient to see with both eyes at once. This is first to be effected by using most striking objects. The light used for the subjective measurement of squint or heterophoria is a good object to begin with. The bringing about of diplopia, measuring the separation of the images, varying their relative position with prisms, and their relative strength by the use of dark glasses before the better eye, are excellent exercises of this kind. For young children such exercises must be of the simplest character, and on this account the fusion tubes of Priestly Smith are of especial value. They are two entirely separate tubes to be held by the child, one in each hand. This giving of something for the hands to do, and the freedom of movement, and the variety of movements which may be made, aid in keeping up the child's interest in the exercises. Sometimes it may be necessary to enfeeble the image of the better eye by use of a dark glass, or of a piece of paper of the proper thickness and translucently pasted over the tube used for this eye. But generally if the two streaks can be seen no such modification is necessary.

The Reflecting Stereoscope.—Next to the fusion tubes may be placed Worth's modification of the reflecting stereoscope. It is more adaptable and more rudimentary than the ordinary stereoscope. It can be used for lateral deviations in the same way as the fusion tubes; and in the main it offers the exercises of a stereoscope. It furnishes employment for the child's hands, and the figures used with it may be indefinitely multiplied.

The Ordinary Stereoscope.—This is of service for certain very valuable exercises and its range of usefulness may be extended by employing specially prepared pictures. The ordinary stereoscopic lenses are so decentered that they act as prisms with the base out. The distance between the optical centers of the two lenses is about 85 mm. With an ordinary pupillary distance of 61 mm., this gives a decentering of 12 mm. for each lens; or with the 5 D. lenses usually employed gives a prismatic effect of 6 centrads for each eye. For children with a small distance between pupils, the decentering is still greater. For 55 mm. it would be 7.5 centrads prismatic effect. The pictures ordinarily used in the stereoscope are so broad, 85 mm., that the prismatic effect is required to render parallel the rays which enter the two eyes from corresponding points of the two pictures. If we make the pictures narrower, and bring them correspondingly closer together, the same prismatic effect will allow them to be seen with convergence. Thus, for a child with a distance between the pupils of 51 mm., pictures 51 mm. wide, placed in close contact. will have their corresponding points fused with a convergence of 34 centrads—almost 20°. These narrower pictures are very readily made by cutting down larger pictures, or in drawing the rude diagrams that often prove serviceable in the orthoptic training of young children.

The stereoscopes arranged for the adjustment of the width of the glasses, or the positions of the pictures, or both, are capable of the same service, and of other uses. But I shall here dwell only on the more common form of the instrument; because its simplicity gives it a much wider range of application. That instrument

is of the most value which can be trusted to the child under the supervision of the parent or caretaker, rather than one to be used for a brief time in the office of the surgeon.

As has been indicated above, these exercises must be practiced a considerable portion of the time to be of great service. The object of the first exercises with the stereoscope is to cultivate the ability to see with both eyes at once. For this purpose a series of pictures is required, the two halves of which differ, but are so related that they may be appropriately superimposed. The picture of the bird presented to one eye, and its cage to the other, is typical of this sort. The stimulus to co-ordinate action is given, when the child is induced to try to get the bird into the cage, or into the center of the cage. Exercises of this character prepare the way for more advanced efforts. They also remain of great use throughout the treatment. Even when normal binocular vision has become habitual, it is worth while to recur to them.

If the child has previously had some practice with fusion tubes, the second class of pictures may soon be brought into use. In these, some portion is common to both pictures. This portion must be fused to avoid diplopia, while the completeness of the picture proves that single vision is not obtained by excluding one eye. Pictures of this sort are less interesting to the child, because their component parts have a single fixed relation; and do not offer the same opportunity of conscious adjustment. On this account one should have a large series of them and should supply them a few at a time. They may be made out of ordinary stereoscope pictures by cutting off different corners from each, or by placing a dot on one, and a cross on the other, and making sure that the whole picture, or both dot and cross are seen.

When binocular fusion is well advanced, the distance between the pictures and the lenses may be varied. If the pictures be wider than the pupillary distance of the patient, variation of the distance from the eye will cause slight variations in the actual amount of convergence. If the width between corresponding points of the pictures equals the pupillary distance, pushing them nearer to or farther from the lenses will make no difference in the convergence required. But it will alter the necessary state of accommodation; and a change of relative accommodation is an exercise of very much the same value as change in relative convergence.

The Reading Bar.—One other practical device remains to be noticed—the reading bar. It provides a highly specialized exercise, depending for its value on the fact that our printing arranges words in long lines, each of which must be followed throughout its whole extent in rapid succession. The bar excludes the habitually seeing eye from seeing some portion of each line, compelling the use of the deviating eye for that part of the time. It has the advantage that it can be employed while pursuing a customary occupation. This is a great advantage within its somewhat narrow sphere of usefulness. I have found it of most value in the preparation of older patients for operation; and in establishing a new co-ordination of eye movements after operation.

Increase in Population in France.—The latest census shows that France has gained 412,364 inhabitants during the last four years. The *Sem. Méd.* adds that this is three times the gain of the preceding four years.

THE STRABISMUS OPERATION.*

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Though a somewhat hackneyed subject, the last word has not yet been spoken upon the strabismus operation, nor will it be for many years to come. While without doubt it is true that excellent results may be obtained in the correction of strabismus by a variety of operative procedures, it is also true, as I think every operator present will acknowledge, that there is a diversity in the results of this operation which plainly indicates that perfection has not yet been obtained. I offer no apology for occupying your time with the consideration of a department of ophthalmic surgery on which such diverse opinions are expressed as we may find in the text-books and articles which appear from time to time on the various phases of this subject.

An analysis of the opinions expressed by a limited number of operators of national and even international reputation will show a divergence of views not only as to details, but on such important points as the following: 1, as to the degree of deviation and the character of the cases which they consider proper subjects for operation; 2, as to the age at which an operation should be performed; 3, as to the choice between tenotomy and advancement; 4, as to the amount of deviation that may be safely corrected by tenotomy; 5, as to whether the operation should be confined to the eye which most constantly deviates or its effect distributed between the two eyes so as to preserve the ocular balance; 6, as to full correction of the error in the first operation or delaying a portion of the operative procedure until the effect of the first division may be properly estimated; 7, as to the practicability of partial, or graduated tenotomy or advancement; 8, as to the value of orthoptic exercises before and after operation; 9, as to the value of tests made with prisms and otherwise during the progress of an operation; 10, as to the importance of the subconjunctival method of Snellen and of suturing the conjunctival wound; 11, as to the necessity of bandaging one or both eyes after an operation for tenotomy or advancement; 12, as to the relative importance of operations upon the superior and inferior recti muscles in cases of hyperphoria and hypertrophia associated with lateral deviations, and 13, as to the most approved form of operation for tenotomy and advancement.

I fully realize that different methods will always have their advocates and it is no part of my intention to undertake to harmonize the views of the members of this Section, but in view of the divergence of theories and methods of procedure which now prevail, is it not proper that each of us should study the plan pursued by his associates and assure himself that he has not been committing that common error of successful surgeons of being too well satisfied with his own methods and results? I am persuaded that when the last word has been spoken on this subject we will have greater consistency in methods and far greater uniformity in results than now prevail.

Dr. Herman Knapp in his excellent chapter on operations,[1] makes the following statements: "1. After a tenotomy of the internal rectus the primary effect is apt to diminish for several days, but then, as a rule, it increases gradually for weeks, months and years. In

* Read at the Fifty-second Annual Meeting of the American Medical Association, in the Section on Ophthalmology, and approved for publication by the Executive Committee of the Section: Drs J. A. Lippincott, Casey A. Wood and H. V. Würdemann.

1. Norris and Oliver's "System of Diseases of the Eye," vol. iii.

many cases we rejoice at having obtained a perfect cosmetic result, but when we see our patient again in later years his eyes diverge more or less. 2. The immediate effect of a tenotomy of the external rectus increases the next three or four days, then it diminishes very gradually, so that the ultimate result is frequently not more than two or three millimeters, and at times it disappears altogether."

An over-correction after division of the internal, and an under-correction after division of the external rectus is then of not infrequent occurrence after a tenotomy even when performed by so careful an operator as Dr. Knapp, and I think every operator of wide experience will agree with me that, in spite of the most painstaking observance of every rule which prudence may dictate, in the correction of high degrees of convergence, we are often disappointed in our final results.

In contrast with this note the following statement made by Landolt,[2] who for a number of years past has been advocating the substitution of advancement for tenotomy as a routine measure: "In twenty years' practice we have never had an over-correction after advancement, which is frequent after tenotomy. We have never produced a strabismus, which can hardly be avoided after tenotomy, at least in the secondary position. The advancement has also the cosmetic advantage of not causing annoying protrusion of the eyeball, sinking of the caruncle, or exposure of the sclera."

If one of these plans of procedure is correct the other is certainly questionable, and yet there are many advocates of each. By far the majority seem, at least in their practice, to still prefer tenotomy when it can be made to serve their present purpose. It is more in keeping with our traditions and is less tedious; but it is a significant fact that, while even approximately perfect equilibrium of the ocular muscles after well-marked strabismus is, as we all realize, most difficult of attainment, such a result is claimed in many instances by those who advocate Landolt's method, and are willing to take infinite pains to obtain it.

A few years ago there was, as will be remembered, a strong reaction against those extremists who claimed to be able to work miracles in all nervous diseases by slight-of-hand performances upon the ocular muscles. This reaction was timely and proper, but we should not be led so far in the direction of conservatism as to prevent our accepting and adopting every improvement in method and technique which has a rational basis.

A careful review of the subject and what personal experience I have had in this direction, leads me to make the prediction that within a few years many of those who have heretofore depended mainly upon tenotomy for the correction of strabismus will find themselves adopting the more tedious but far more conservative operation of advancement, or resection almost as a routine practice.

While, for the purposes of this paper, it is not practicable to consider fully the anatomy of the ocular muscles, there are a few practical points which it will be well to review before passing on to the subject of operations. The oculo-orbital fascia, in the descriptions of which great variations are found, should be dealt with as a mass of more or less condensed connective-tissue fibers, differentiated into a dense membrane in certain portions, while in others it is made up of somewhat loose connective tissue joining the conjunctiva to the eyeball and to the sheaths of the tendons of the recti muscles and also uniting the sheaths of these muscles somewhat loosely to the sclera. The lateral or restraining fibers connect the sheaths of the muscles with the more condensed portions known as Tenon's capsule. The effect of this anatomical arrangement is that a division of the tendon at its insertion, provided the lateral fibers remain intact, results in a limited retraction of the tendon and its secondary insertion at a point only a short distance posterior to its former point of union with the sclera. The passing of a hook beneath the tendon and breaking up of the loose fibers which unite its sheath with the sclera, adds very little to this retraction. The division of the fibers which unite the sheath of the muscle with the conjunctiva, adds more to the power of retraction, but if we wish to obtain free retraction of the muscle we must divide the lateral fibers connecting it with the more dense portions of Tenon's capsule which lies between the muscles, or what in fact amounts to the same thing, separate this capsule from the sclera above and below the point of insertion of the tendon. The foundation of all theories which deal with the subject of tenotomy and advancement lies in the relations of the tendons and muscles to this oculo-orbital fascia, or to be more exact, that portion of it which is termed Tenon's capsule. The tendons of the recti muscles are inserted at points varying somewhat in distance from the margin of the cornea: The internal rectus at a distance of 5.5 mm., the inferior 6.5 mm., the external 6.9 mm., and the superior 7.7 mm. The widths of the tendons also differ in the following order: internal 10.3 mm., inferior 9.8 mm., external 9.2 mm., superior 10.6 mm.—Fuchs. In length the tendon of the internal is 8.8 mm., the inferior 5.5 mm., the external 3.7 mm., and the superior 5.8 mm.—Merkel.

It is well in operating to remember also the peculiar insertion of the superior rectus muscle. It is quite wide, and at the nasal side is inserted much farther forward than at the temporal. It is so set that the bulk of its insertion is on the outer half of the eyeball. The inferior rectus on the other hand is so inserted that its temporal border is slightly in advance of the nasal. The measurement (3.7 mm.) given above by Merkel as the average length of the tendon of the external rectus muscle, does not conform to the impression I have obtained in the advancements and tenotomies which I have made.

In a number of resections of this tendon I have removed more than 3.7 mm., and obtained excellent results. It is possible that in doing so I may have included some of the muscular fibers.

For our purpose the various operations resorted to for the correction of strabismus may be classified under the following heads:

Tenotomy.—1. Partial division of the tendon (graduated tenotomy). 2. Complete division of the tendon. 3. Complete division of the tendon, with division of the lateral fibers of the capsule.

Advancement.—1. Partial advancement of the tendon (graduated advancement). 2. Complete advancement of the tendon. 3. Complete advancement of the tendon with advancement of the capsule. 4. Resection of the tendon. 5. Resection of the tendon and capsule.

In all of our operations for the correction of strabismus, the following general rule should be observed and exceptions to it are seldom justifiable: Whether we operate by tenotomy or adopt the more conservative method of advancement, the effect of the operation must be so distributed between the various muscles as to preserve the control of the eye in all ordinary movements.

2. Archives of Ophthalmology, vol. xxvi, p. 8.

A simple tenotomy will, according to Fuchs, correct about 3 or 4 mm. of convergence. In divergent strabismus, he has found that a simple tenotomy will not correct more than 2 mm. as an average. In view of the effects which we have all obtained in some of our earlier operations, this rule seems extremely conservative, but if we confine our division to the tendon at its point of insertion and avoid division of its lateral attachments, I do not believe it is safe to expect a much greater result than he has indicated, and in my own operations where I have depended upon tenotomy, I have seldom gone far beyond this limit without having reason to regret it.

Many rules have been laid down to enable the operator to avoid the excessive effects which often follow as a late result of tenotomy, but in difficult cases it not infrequently happens that, in order to obtain even a moderate degree of correction, these rules are violated. When more than 3 mm. of convergence, or 2 mm. of divergence is present, if tenotomy is relied upon, the effect should be divided between the two eyes rather than by operating upon one alone to obtain a correction at the expense of a free division of the lateral attachments.

Knapp lays down the following rules to govern the operator in tenotomy: "A. As a rule no squint operation should weaken the muscle beyond its physiological limit of power. B. After a tenotomy of the internal rectus, the result of the immediate examination should be as follows: 1. In adduction the medial margin of the cornea should readily reach the caruncle. 2. The near point of binocular fixation should not be less than 5 centimeters—two and one-half inches. 3. The eyeball should not protrude. 4. There should be some convergence left."

If these rules are strictly adhered to and the lateral fibers are left undisturbed, we may undoubtedly avoid an—immediate—over-correction, but the weak point in such a system of rules is that, if strictly adhered to, only a slight correction of 3 or 4 mm. is obtained and, even if the operation is divided between the two eyes, a careful examination of the field of fixation will almost certainly reveal some limitation of motion.

How often it has happened in the experience of each of us that after such a tenotomy the immediate result has been not only insufficient but almost nil and to save ourselves and the patient from the chagrin of a sense of failure, we have divided first a few and then a few more of the lateral fibers and then wondered whether we would not at some future time discover that we had slightly over-corrected the error.

Now it is a fact that even the setting back of the tendon alone, if it is sufficient to give us 3 or 4 mm. of correction must, to a limited degree, restrict motion and violate the spirit of the first of these general rules.

The very essence of such an operation consists in the fact that the control which the muscle exercises over the eye is made less effective, whereas it should be our object not to lessen but to increase this control. The movement of an eye, in a given direction, depends not alone upon the contraction of the single muscle which turns it in that direction but also, and only to a less degree, upon the co-ordinated movement of its antagonist, while both of these must again act in harmony with the corresponding muscles of the other eye. In any squint not dependent upon paralysis or traumatism, surgical or otherwise, of one of the muscles the squinting eye, while having an improper direction, still moves in harmony with its fellow and its excursions are usually of the same amplitude. If we wish to preserve the harmonious relation of the four muscles which take part in this somewhat complicated act of co-ordination is it reasonable to begin by an avowed attempt to cripple one of them?

It is a mistake, as Landolt has pointed out, to suppose that the antagonist gains in strength what the tenotomized muscle loses and, even if it did, it is not proven that the muscle we divide has more strength or more power to move the eye than it should have. It is a question not of power but of direction with which we are dealing and the choice between tenotomy and advancement reduces itself to this: Is it better that the group of four muscles acting to produce harmonious movements of the two eyes, should have the aggregate of control which they exercise over the eyes increased by giving one of its members a more advantageous attachment, or diminished by setting another back and thereby lessening its control?

In the latter case we gain the proper direction, but in so doing we make a distinct sacrifice of a portion of the control which the group exercised over the eye, while in the former we also gain the proper direction but increase the aggregate of control by giving to one of the members an advantage in moving the eye which may be exercised or not as circumstances may demand.

I do not wish to be understood as advocating so radical a change in the accepted method of dealing with squint as the entire substitution of advancement for tenotomy, though that would seem to be the logical outcome of the above reasoning.

Advancement is so tedious and tenotomy so simple an operation that the latter will probably always be preferred in slight deviations, but whenever a deviation exceeds 5 mm. it is proper to raise the question whether an advancement should not be substituted for tenotomy; and whenever in any case of tenotomy it is found that the proper effect can not be produced without considerable division of the lateral attachments of the tendons an advancement should be substituted or should supplement the tenotomy.

As to the best method of performing a tenotomy or advancement, it is my opinion that equally good results may be obtained in a variety of ways, provided certain general principles are observed, and it is with general principles that we are here dealing rather than with the details of special methods of operating. these principles the most important relates to the division of the effect between the various muscles and the preservation of as complete control of the eye by each muscle as may be practicable. If the deviation is slight and a tenotomy is decided upon I greatly prefer the method of Snellen as modified by Stevens—a sub-conjunctival operation—buttonholing the conjunctiva and tendon and cutting both ways. But in those relatively frequent cases in which, after the first incision, there is well-marked hemorrhage beneath the conjunctiva, I at once convert the small incision into a large open wound in order to avoid a troublesome sub-conjunctival thrombus.

Careful measurements, linear, angular and by prisms, before, during and after the operation, I consider of the utmost importance, but in cases in which there is marked amblyopia we must judge mainly by inspection and for this purpose there is a great advantage in operating in a dental or other reclining chair and in having the patient in the upright position while testing so that the operator may stand off at a distance of eight or ten feet

and to serve the movements of the eyes. An examination made at the near point is often very misleading. If the operation is divided between the various muscles of the affected group and, in case the deviation is marked, is corrected mainly by a well-performed advancement or resection, measurements are of great value, but in the old method of operating in which the tendon was divided at one cut and what deviation remained was corrected by free division of the lateral attachments, the eye became so unstable that measurements made at the time of operation afforded very little information as to what the final position of the eyes would be.

It is not infrequently the case after a carefully performed operation for convergent strabismus as a result of which the eyes occupy approximately the proper position, to have, owing to the presence of what is sometimes termed a false macula, a well-marked heteronymous diplopia with the images widely separated.

This is probably due to what Dr. Berens has well termed "neuro-muscular memory," and should not disconcert us as it seldom causes serious disturbance, though it may make it more difficult to judge of the accuracy of the result obtained. We are, in fact, forced in such cases to depend entirely upon objective tests. It must, of course, be borne in mind that the more extensive the traumatism inflicted during the operation the more unreliable are the results of measurements made immediately after operating, and this is an additional argument in favor of advancement in its various forms, as by this means we seldom have an over-correction and by allowing a portion of the deviation to remain, we may at a subsequent operation gauge the result accurately in a supplemental tenotomy, correcting the slight remaining defect.

In tenotomy we should, so far as may be practicable, let the capsular attachments alone if we wish to avoid crippling the combined movements of the eyes, but in advancement or resection it is desirable, in our attempts to increase the control exercised by a given muscle, to bring forward or shorten the capsule with the tendon. In so doing we gain another advantage which is of great importance, in obtaining a firm hold for our sutures. In fact, in the resections which I have performed of late, I have made free use of sutures, practically quilting the tendon and capsule together, and have thus avoided a very annoying feature of some of my former advancements in which the effect would be in part lost within a few days owing to the insufficient and uncertain hold obtained by sutures introduced in the usual manner in the tendon alone.

While it has been greatly improved within a few years, there is room for still greater improvement in the operation for advancement. Before the days of asepsis advancement was indeed a formidable operation, often being followed by decided reaction, and even as now practiced when we compare it with tenotomy it is not strange that a beginner in ophthalmic surgery should, when in doubt, prefer the latter. But the question of a little more or less annoying detail in the operation should not be allowed to weigh against any advantage we may gain for our patients, and advancement should be unhesitatingly performed when it is apparent that it will produce a better final result.

The old operation, by which the tendon is split in its center and one portion drawn forward above and the other below the cornea, while certainly effective, has seemed to the writer unnecessarily complicated. Any method which, with a freely exposed field of operation, succeeds in securing and evenly mooring the tendon and capsule of Tenon to the sclera at a point well in advance of its former point of attachment will accomplish the desired end and, in cases of less marked deviation, a method which resects a sufficient amount of the tendon and capsule and firmly sutures the distal to the proximal portion will also yield an excellent result.

Because of the thorough manner in which the field of operation is exposed, probably no method is a greater favorite with those who have tried it than that devised by Dr. Savage of Nashville, by which an L-shaped primary incision is made, one side of which is parallel with the line of insertion, and the other parallel with one border of the tendon and the flap turned well back and held out of the way by a suture while the tendon is advanced or resected.

The method of capsular advancement advocated by Dr. Fox of Philadelphia for cases in which there is extreme deviation certainly has the advantage of simplicity and the results he reported to this Section last year were excellent, but I have been thus far deterred from adopting it owing to the amount of traumatism inflicted and a feeling that I would prefer to see the tissue with which I am dealing in an operation of such delicacy.

With the exception of those cases in which the degree of deviation is excessive, resection affords excellent results and for several years I have been endeavoring to discover some method by which I could simplify the ordinary procedure and substitute it, so far as is practicable, for tenotomy. I found that by introducing a tenotomy hook in the ordinary manner and then seizing the fold of tendon beneath the hook with Prince's advancement forceps, I could gauge the amount of tendon removed by the point at which the forceps' blades were applied and suture it thoroughly and evenly at my leisure.

This led me to devise the small double hook which is figured in the report of this Section for last year and which in a number of instances has since served an excellent purpose.

After making a vertical conjunctival incision as long as, and one or two millimeters behind the insertion of the tendon, I make in Tenon's capsule two short cuts with the scissors parallel with and a short distance above and below the tendon and extending from its point of insertion backward to a distance equal to the amount of shortening desired. The central blade of the hook is now inserted below and made to include the tendon and that portion of Tenon's capsule which covers it and by turning the milled head this central hook with the tendon and overlying capsule is drawn up between the other two blades to such a distance as may be desired. Interwoven sutures are then inserted, firmly stitching the two surfaces of the folded tendon together, after which the hook is removed, the apex of the fold cut away with the scissors and the conjunctival wound closed with fine silk sutures.

A comparison of the writings of various acknowledged authorities on strabismus reveals in the after-treatment the same diversity of opinion as is observed in other departments of this subject. While Dr. Duane of New York prefers after tenotomy to keep the eyes open and practice orthoptic exercises before the wound is firmly united in order to obtain binocular fixation, Dr. Landolt, on the other hand, keeps both eyes bandaged during the healing process, often insisting upon the patient remaining in bed for six days. Between these extremes we may find every variety of directions given to patients as to

their conduct after operation, which only proves that, as in other departments of surgery, fair results may be obtained in a variety of ways. And, while I have obtained good results by the course I have pursued, which may be said to be midway between these extremes, I am free to admit that it would give me the greatest pleasure to be able to observe minutely the progress from day to day of the patients treated by both the methods described, as certainly Dr. Landolt's reports indicate a higher standard of final results than is claimed by many operators, and under such circumstances it is becoming that we should at least hold our minds open to conviction.

In conclusion, I would state as my conviction that, in the correction of strabismus, advancement, or resection combined with a very limited tenotomy, should, as a rule, be substituted for simple tenotomy.

ARTIFICIALLY PREPARED FOODS, THEIR NUTRITIVE VALUE AND DIETETIC APPLICATION.

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The history of the scientific production of artificially prepared foods, like that of the subjects of digestion, nutrition and metabolism, is nothing more than a summary of the achievements of the experimental sciences relating to general biology and the science of medicine.

Investigation of the various empiric dietetic systems, from the time of Aristotle up to the end of the eighteenth and the beginning of the nineteenth century, shows that, while various grain decoctions, ptisan, almond, egg and sugar-water and probably a few other dietetic preparations were used for invalids, no preparation existed which might lay claim to being an artificially prepared food in the sense that the term is used to-day. Far reaching and revolutionary were the discoveries which ushered in the birth of the exact knowledge of nutrition and dietetics![1] On the one hand we had the discovery of oxygen by Priestly and Scheele in 1774, and the subsequent development of the theory of oxidation by Lavoisier in 1780; on the other hand was the investigation of Spallanzani and Reaumer, in 1752, on the subject of digestion.

Let us here rapidly sketch the outlines of the growth of our subject and review the fundamental principles by which the nutritive value of foods may be judged and the nutritive demands of the human individual adjusted. In this manner we shall be able to appreciate the status of our subject and to determine the applicability of artificially prepared foods to the diet of man in health and disease.

Although from the time when Lavoisier defined the processes of oxidation, up to, and even beyond, the first quarter of the nineteenth century, considerable work had been done on the subject of nutrition, little was really accomplished until the theories of Liebig, the greatest chemist of that century, were shown to be incorrect. As late as 1842 very little was known of the nutritive and physiologic significance of albumin, fat and carbohydrates. It was during this period that Liebig believed that the destruction of albumin served the purpose of furnishing the organism with energy for the execution of mechanical work, while the oxidation of fats and carbohydrates was supposed to furnish heat to the body and protect the albumin from unnecessary oxidation. It was very soon shown, however, that this explanation was incorrect, for experimental evidence was brought forward which proved that the increased ingestion of albumin by an animal at rest was accompanied by a corresponding increase of nitrogen excretion. Important as was the demonstration of this fact, its exact significance was unfortunately misconstrued, and, in consequence, gave rise to much controversy and years of laborious experimentation. It was now taught that the minimum quantity of albumin necessary to the animal organism was expressed by the quantity of albumin disintegrated during inanition. Finally, during the years 1857-60, Bischoff, Voit and Pettenkofer published the results of their experimental work, and it was at this time really that the cornerstone of nutrition, as an exact science, was laid.

For the continued normal expressions of the functions of an organism, the ingestion of a certain and definite quantity of food is requisite. This general biologic law manifests itself, irrespective of theoretical speculation or scientific observation, in the expression of the instinctive impulse which guides every organic entity in its selection of the requisite quantity and quality of food. However, not until Helmholtz and Meyer formulated the theory of the conservation of energy, did we fully appreciate the philosophy of this law.

Every organic function is accompanied by the production of heat, which finds its origin in the oxidation of definite chemical combinations, the absorbed and assimilated products resulting from the digestion of substances termed foodstuffs. The amount of heat which an organism gives off is equivalent to the calorimetric value of the food which it requires in a given period of time. The food which the system requires is represented by the nutrient principles, albumin, carbohydrates and fat, each one of which may substitute or replace the other, but only, as we shall point out later, within the limit of their minimum nutritive or physiologic quantity. Irrespective of the relative proportions of each one of these food principles, the total heat requirement of the organism remains the same.

Every foodstuff possesses a certain caloric value, which is expressed by the term calorie, and each represents that quantity of heat necessary to raise one kilogram of water from 0 to 1 C. It is customary to express the total quantity of nutriment necessary to maintain the nutritive demands of an organism by the caloric value of the food introduced into the system. Instead of simply stating that the system requires so much each of fat, albumin and carbohydrates, we express it by the number of calories which the system requires in a given period of time under definite circumstances, presupposing always that these three foodstuffs be contained in certain proportions and in definite relationship to each other. Although this is a very convenient method and the one now generally followed, it is not strictly logical, because it neither embraces the valuation of the nutriment required to rebuild the wasted tissue of the body, nor, in the organism at rest, the amount of energy expended in the carrying on of circulation, heart beat, respiration, gastro-intestinal and glandular activity.

Expressing, therefore, only partly the metabolic significance of a given food, the caloric method is, nevertheless, the most convenient we have at our disposal at the present time. This method is founded upon the fact, to

1. Breisacher: The Principles of Metabolism and Nutrition.

which we have already alluded, that the amount of heat given off by an organism is practically equivalent to the calorimetric value of the food which has been introduced into it. When fat, albumin, carbohydrates or gelatin is subjected to calorimetric estimation it is found that each has a definite caloric value, thus one gram each of these foods equals the following: Albumin, 5.7 calories; gelatin, 5.5; fat, 9.3; starch, 4.1; cane sugar, 4.0, and glucose, 3.7 calories.

The method of calorimetric estimation of foodstuffs consists in introducing a given quantity of food material into a specially constructed bomb, which is filled with oxygen under a pressure of from fifteen to twenty-five atmospheres. After the bomb has been submerged in water, the substance under examination is ignited by means of electricity and an estimation made of the heat imparted to the water.

It has been shown that fats and carbohydrates when introduced into the system are oxidized into carbonic acid gas and water, and further, that when subjected to the action of a calorimeter they undergo a like change. With albumins, however, the matter is somewhat more complicated, for, while they are oxidized into nitrogen, carbonic acid gas, water and a small quantity of sulphuric acid in the calorimeter, in the animal organism they are split up into urea, uric acid, kreatin, kreatinin, hippuric acid, etc. To determine, therefore, the caloric value of albumin to the system it is necessary to subtract the caloric value of these organic oxidation products.

By this method of calculation we find that the physiologic nutritive value of albumin is 4.1, compared with its calorimetric value of 5.7. The physiologic heat or caloric value of fat and carbohydrates is identical with the calorimetric value. The physiologic or nutritive caloric value, therefore, of one gram of fat is 9.3, of one gram of carbohydrates, 4.1, and of one gram of albumin it is also 4.1. Fat, albumin and carbohydrates form the three chief nutrient principles which enter into the diet of a human individual. The necessary quantity of each one of these separate nutrient principles required by the system, and the relationship of one to the other, is dependent upon varying circumstances. The relationship of fat, carbohydrates and albumin in the diet of an infant is not identical with that in the diet of an adult, neither is the required relative quantity of these nutrient principles, estimated per kilogram body weight, the same in the mature as in the immature organism. Further, the demands of a weakly developed inactive organism are different from those of a laborer or an athlete. In accordance with the law of substitution, each nutrient principle may be substituted for the other, within its minimum physiologic limit, as recent experiments have conclusively shown.[2]

A thorough comprehension of these laws, which I shall define more particularly later on, is absolutely necessary in the rational feeding of both healthy individuals and invalids. The fundamental principles, upon which our entire knowledge of the subject of nutrition is founded, are the result of experiments made upon human individuals and animals. Among the most important are those experiments made upon fasting individuals. When food is absolutely withheld from a man weighing about 70 kilograms—154 pounds—for a period lasting from twenty-four hours to a number of weeks, it is found that the system loses from 50 to 80 grams of albumin and from 200 to 250 grams of fat, each day. In a single twenty-four-hour period the loss of water is from 800 to 1000 c. cm.; in longer periods, the subject of the experiment is usually given a sufficient amount of water to cover this loss.

The execution of a certain amount of mechanical labor during a period of fasting increases the fat consumption and water exhalation while the albumin waste remains the same as in the fasting individual at rest. It has further been shown that persons provided with an abundant supply of adipose tissue withstand the influence of fasting more effectually than lean individuals, for the reason that in the former the adipose tissue furnishes the major percentage of caloric demand of the organism, thus protecting the albumin supply from excessive waste.

The size or bulk of an individual also determines the total fat and albumin consumption of the system, and it has been demonstrated that, while the absolute quantity of albumin and fat may be greater in the larger individual than in the smaller one, the relative quantity of both of these foodstuffs, estimated per kilogram body weight, is greatly in excess in the smaller or less bulky individual, than in the larger one. This law is equally invariable, irrespective of whether the food consumption refers to a fasting or normally fed individual, or whether it be applied to an infant or an abnormally large or small adult. The nutritive demand per kilogram body weight, therefore, is in an inverse proportion to the size or bulk of the organism.

If an animal from which food has been withheld for a certain period of time, i. e., a number of days or weeks, be fed meat it will be found that the nitrogen excretion, as expressed by the nitrogen in the urine, is increased, and, with each additional increase of albumin (meat) to the diet, the excretion of nitrogen is increased proportionately. This increase of nitrogen excretion continues until sufficient amount of albumin (meat) has been added to the diet to effect a nitrogen balance, that is, a nutritive condition in which the nitrogen income is equal to the nitrogen outgo. It was taught by Voit that the quantity of albumin necessary to cover the albumin loss of the system was two and one-half times greater than the loss resulting during a period of fasting. This, however, is not strictly correct, as the writer and several other investigators showed in a series of nutrition experiments.[3]

In addition to the loss of albumin, the fasting individual suffers a distinct loss of fat from his organism, and it has been found that, by insuring the absorption of fat equivalent to the loss of adipose tissue during fasting, the fat consumption may be checked while the albumin destruction remains unchanged. It follows from this that the ingestion of fat by a fasting animal may prolong life, but not prevent ultimate death from starvation. The exclusive feeding of carbohydrates, like that of fat, does not prevent the occurrence of death by starvation, although they protect the system from albumin destruction more effectually than fat.

If a definite quantity of fat and albumin is given to an individual who has been subjected to a period of fasting, it will be noticed that the loss of organic or body albumin is arrested. This does not occur when simply fat or carbohydrates are given and which can not be practically achieved in the human being by an exclusively albumin diet. Fat, whether existing in the system as adipose tissue or introduced into the system as food, protects the organic albumin from undue waste.

2. Breisacher: (*a*), Eiweissbedarf beim Menschen; (*b*), Principles of Metabolism and Nutrition.

3. Breisacher: Eiweissbedarf beim Menschen.

When along with a requisite amount of albumin, more fat is introduced into the system than the total caloric demand requires, an increase in the supply of adipose tissue is achieved. When carbohydrates, in the form of sugar, starch or dextrin, are added to a diet composed simply of albumin, the destruction of the latter is lessened, and, as in the case of fat and albumin, if a sufficient quantity of carbohydrates be added to a requisite amount of albumin, the loss of organic albumin is arrested. Likewise, when carbohydrates are added to a combined fat and albumin diet, the total consumption of both of the latter is lessened. The effect, however, of like quantities each of fats and carbohydrates, in retarding albumin consumption, is not identical. Notwithstanding the fact that a gram of fat represents a caloric value, which is 5.2 greater than a gram of carbohydrates, it has less influence in checking albumin waste than the latter. As we have already pointed out, when an excess of fat is fed to an individual, a deposit of fat, in the form of adipose tissue, is effected; when an excess of carbohydrates is fed, an elaboration of fat, with a resulting increase of adipose tissue, takes place.

Gelatin is a nitrogenous substance resembling albumin in its atomic arrangement, in its conversion into peptone by the gastric and pancreatic secretions, and in its final oxidation into urea. When gelatin is added to an albumin diet, it has an influence in lessening organic albumin and fat dissipation similar to that possessed by both fat and carbohydrates. It is of interest to note that while gelatin has a more pronounced effect in lessening organic albumin destruction than both fats and carbohydrates, in reducing the organic fat dissipation it is less effectual than either fat or carbohydrates. Despite the chemical resemblance of gelatin to albumin it can not replace that substance, nor are we acquainted with any substance which can substitute the minimum physiologic nutritive quantity of albumin necessary to an animal organism.

These then are, in brief, the primary fundamental principles by which we must be guided in nourishing individuals, both in health and in disease. These principles emphasize the fact that of the three chief nutrients—albumin, fat and carbohydrates, to which a fourth, gelatin, may be added—albumin is the substance which requires the foremost consideration in the selection of a diet. This is true because it can not be replaced by any other known nutrient, irrespective of whether it belongs to the nitrogenous or non-nitrogenous group of chemicals or foodstuffs.

These principles further teach us that one or preferably both of the non-nitrogenous food principles, carbohydrates and fats, should be added to an albumin diet for the maintenance of the healthy functions of the organism. To these two non-nitrogenous nutrients we may add gelatin, which, as we have seen, has an influence similar to that of both fat and carbohydrates.

Let us here consider the exact quantity in which each one of these nutrient principles must be contained in the daily diet, and the circumstances which determine a variation in the quantitative demands of the system upon these substances. The nutritive demands of the human organism, from the period of infancy to that of adolescence and from the latter to that of maturity and decline, are subject to varying fluctuations. Again, different degrees of bodily activity, both physical and psychical, during sleep and the waking state, thermic and climatic influences, body weight and size, and finally various pathologic conditions, all make definite nutritive demands upon the system. For instance, in infancy there is more nutriment required, estimated per kilogram body weight, than during the period of maturity; the body weight and size has an influence, as we have already pointed out, in so far that a smaller organism requires relatively more nutriment than a larger one; during sleep or absolute rest, compared with the waking state, the albumin metabolism remains unchanged, while the fat and carbohydrate consumption is reduced; bodily exercise is accompanied by an increased carbohydrate and fat consumption, while the albumin metabolism remains uninfluenced. Heat and cold affect the organism differently—increased body temperature raises the total carbohydrate and fat consumption, while the reduction of external temperature increases, and an increase of external temperature reduces, both the fat and carbohydrate metabolism.

Finally, in pathologic conditions, such as fever, dyspnea, anemia, diabetes, Bright's disease, icterus uric acid diathesis, etc., various nutritive abnormalities are discernible, and it behooves us at this point to determine the normal nutritive mean of the organism and its practical application to pathologic conditions. In this way we shall be enabled to logically appreciate the dietetic demands in pathologic conditions and estimate the applicability of artificially digested foods to the dietary of invalids. We indicated in our foregoing remarks that the preferable diet for a normal individual is one consisting of certain quantities of albumin, fat and carbohydrates.

Determined by methods which consisted in estimating the nitrogen and carbon output in individuals subsisting upon an ordinary indefinite diet, it was originally estimated that the average individual of 70 kilograms—154 pounds—body weight, at rest and during moderate and severe physical labor requires for every twenty-four hours, 100 to 140 grams of albumin, 50 to 100 grams of fat and 400 to 500 grams of carbohydrates. Practical observation has shown that some individuals subsist upon as little as 75 to 80 grams of albumin in twenty-four hours, and experimentally these figures can be materially reduced for a considerable length of time, as the writer showed in a series of experiments covering a period of 33 days.[3] In ordinary cases, however, unless prompted by some particular reason to materially reduce the albumin quantity, it will be preferable to adhere to the 90 to 100 grams of albumin ration for the average individual at rest or during light exercise. Figured in calories, the average individual requires during absolute rest from 30 to 34 calories per kilogram body weight, during light exercise 34 to 40, for a medium amount of work 40 to 45, and during severe labor 45 to 60 per kilogram body weight, for every twenty-four hours.

A diet consisting of 100 grams of albumin, 50 grams of fat and 400 grams of carbohydrates would equal: Albumin 100 grams × 4.1 = 410 calories; fat 50 grams × 9.3 = 465 calories; carbohydrates 400 grams × 4.1 = 1640 calories—a total of 2515 calories. This number of calories represents a sufficient amount of heat or food, for an individual weighing about 74 kilograms, or 163 pounds, at rest. To further elucidate this method of estimation I append a diet list, which I used in a series of experiments made upon myself[2].

Materials.	Quantity	Albumin. (Nitrogen 6.25.)	Carbohydrates.	Fat.
Meat	75 grams	15.40	....	1.33
Rice	200 "	12.36	149.60	0.66
Potatoes	225 "	5.49	45.00	....
Bread	200 "	17.92	120.00	....

Materials.	Quantity	Albumin. (Nitrogen 6.25)	Carbohydrates.	Fat.
Starch	70 grams.	0.28	69.72	....
Eggs	50 "	6.27	....	6.05
Milk	150 "	5.60	7.39	6.75
Sugar	40 "	....	40.00	....
Butter	50 "	0.43	....	....
Beer	700 "	3.67	62.51	....
Tea	760 "	0.58	....	....
		67.80	494.22	60.49

Albumin $67.80 \times 4.1 = 277.98$ calories; carbohydrates $494.22 \times 4.1 = 20.26$ calories; fats $60.49 \times 9.3 = 562.56$ calories—a total of 2866.84 calories.

In the foregoing table the quantity of fat, albumin and carbohydrates is accurately accounted for as is also the total caloric value. The number of heat units, 50.22 per kilogram body weight, is greater than was really necessary, but I chose this number for the reason that I was reducing my albumin ration far below the usual quantity, as I determined by a great number of total nitrogen estimations while on an indefinte diet.

ARTIFICIALLY PREPARED OR PREDIGESTED FOODS.

This brings us then to the actual consideration of the subject of artificially digested foods, and their application to the diet of invalids.

Until 1843, when Graves published his observations upon the diet of fever patients, there existed a dictum in the practice of medicine, which read, that to successfully treat fever patients the diet must needs be reduced to a minimum quantity, and this was successfully accomplished by resorting to cereal water and various broths, which were practically destitute of nutritive value. Following the writings of Graves, in which it was urged that "fevers be fed," the observations of Chossat on the effect of inanition were published, and these two writings then, in conjunction with the experimental observations of Liebig, Voit, Pettenkofer, et al, acted as an incentive to the research upon which our present knowledge of invalid feeding is founded.

Although as early as 1752 Reaumer and Spallanzani discovered the digestive action of gastric juice, it was not until 1824 that Prout discovered the gastric hydrochloric acid, and 1850 that Lehman first applied the term of peptone to the products of albumin digestion. The diastatic action of saliva was not discovered until 1831, although Payen had discovered grain diastase thirty-six years previous to this time.

We have evidence that in ancient times grain water was added to milk to render it more easily digested, and other methods were resorted to in attempting to make food more acceptable to invalids, yet the first important attempt to produce artificially prepared foods was made subsequent to the discoveries which we summarized in the preceding pages. As in other matters pertaining to nutrition, Liebig was a pioneer in the department of artificially prepared foods. Liebig's efforts resulted in the production of these two foods which bear his name: 1, Liebig's extract of beef,[4] known, we dare say, to every civilized race; 2. Liebig's infant soup, which while it is remembered by but few to-day nevertheless deserves the distinction of being the preparation which has given rise to the almost countless numbers of so-called baby foods.

When one considers the havoc which many of these improperly prepared invalid and baby foods have occasioned and the misuse to which numerous really praiseworthy preparations have been subjected, the thought involuntarily arises as to whether it would not perhaps have been far better had the idea of artificially preparing foods for invalids and babies never occurred to any one. The subject of the feeding of artificially prepared foods is in the same deplorable condition as that of nutrition in general, but whereas ignorance and neglect of the subject of nutrition, as applied to feeding the average individual and using the term in a general sense, affects simply healthy or somewhat indisposed individuals, lack of proper knowledge to correctly adjust the administrations of artificially prepared foods affects both the helpless infant and the invalid, who really are in need of proper nourishment.

The medical world is justified in insisting that the manufacturer produce an artificially prepared food which answers the requirements of the nutritive demands of invalids. Further, the manufacturer should be compelled to print upon the package of each preparation of artificially prepared food an exact quantitative and qualitative analysis. This is a duty which the manufacturer owes to the medical world, and the duty which the latter owes to the manufacturer is that it sufficiently comprehend the principles of nutrition, thereby insuring the rational application of reliable preparations to the dietary of invalids. With these points observed it simply remains to be determined, in selecting an artificially prepared food, whether it be palatable to the patient and whether it possess the nutritive and therapeutic value required of it.

In selecting an artificially prepared food for an invalid, we are guided by the same principles of nutrition and metabolism as in feeding an individual in health. An invalid, like a healthy individual, requires a definite quantity each of albumin, fat and carbohydrates to furnish the necessary total caloric demand of the organism. We find a deviation from the above statement in certain pathologic conditions, in which it is necessary to reduce the quantity of one nutrient principle and substitute in its place another. I have reference to the reduction or entire withdrawal of carbohydrates in diabetes, the reduction of albumin in uric acid diathesis, etc. Irrespective of a reduction of particular food principles, the total caloric supply must remain unaltered or at least as little changed as is compatible with the condition of the patient. The dream of the medical profession, from the very dawn of the science of nutrition, has been to prepare an artificially digested food which would relieve the gastro-intestinal tract of its usual digestive labor, but, like the illusion of an elixir of everlasting youth, it has resulted only in idle and futile search.

With the newly acquired knowledge of some of the more pronounced phases of digestion, it is comprehensible why the trend of scientific aim should have led experimenters and clinicians in this direction. The artificial conversion of albumin, fat and carbohydrates into their respective end products has, it is true, been accomplished, but, despite this, the subject of the feeding of artificially digested foods is still far from being solved. While the artificial preparation and dietetic application of fats and carbohydrates have given fairly satisfactory results, the same can not be said of predigested albumin, since peptones and albumoses have proved to be stubborn and unyielding in the extreme.

It is not so many years ago that Voit, along with Bruecke and other celebrated physiologists, supported the old view of Tiedeman and Gmelin, according to which peptone was considered to be a decomposition

4. Proust as early as 1821 produced meat extract, but the credit of the practical manufacturer of it really belongs to Liebig.

product and one that could not be regenerated into albumin. It was thought that the peptone resulting from the digestion of albumin in the gastro-intestinal tract was absorbed by the circulation as such, and was oxidized in the system in a similar manner to carbohydrates and fats, while the albumin necessary to rebuild the wasted tissues of the organism was thought to be dependent upon the absorption of unaltered albumin from the gastro-intestinal tract. Lehman, on the other hand, contended that the conversion of albumin into peptone was a definite physiologic process, which served the purpose of rendering the latter more easily absorbed, to again be converted into albumin in the circulation. The great authority of Bruecke, however, had its influence, and as late as 1877 peptone was looked upon as being a product of decomposition. Further exact experimental research has indeed proved that many albumins, such as serum albumin, egg albumin, acid albumin and globulin, may reach the circulation without first undergoing peptonization, but it has also been demonstrated that the end products of albumin digestion, instead of being products of decomposition, are reconverted into albumin in the mucous membrane of the gastro-intestinal tract to circulate as such in the system, which fact definitely disposes of the older contention of Voit, Bruecke and others. Two or three years previous to this period the first peptone feeding experiments were instituted, and, while the results of several experimenters made it appear very probable that peptone, so-called, did possess nutritive worth, the proof was not sufficiently conclusive to prevent Voit, as late as 1881, from offering experimental data in support of his earlier contention. Up to this time peptone was considered a simple or elementary compound, but the famous investigations of Kuehne and Chittenden and other of his pupils proved that peptone was really a mixture of many different substances and that the so-called peptone—preparations of manufacturers—consisted principally of albumoses, bodies intermediate between albumin and true peptone.

Several experiments instituted with albumoses and pure peptone apparently proved that the former could serve as a substitute for albumin, while peptone usually acted as a violent irritant, causing vomition and diarrhea. Following these preliminary observations it was then finally proved that a number of preparations, consisting chiefly of albumoses, together with varying quantities of true peptone and insoluble albumin, could be substituted for the ordinary unaltered albumin, such as is contained in the daily food ration. Still more convincing and decisive are the experiments made with pure albumoses, which prove that their nutritive worth is equivalent to unaltered albumin, while anti-peptone, resulting from pancreas digestion at least, seems to be destitute of this power of substitution.

With this problem of the nutritive role of peptone and albumoses fairly well decided, the question arises whether artificially digested albumin is really applicable to the diet of invalids. We have seen that true peptones have not given satisfactory results as dietetic agents, and, if we bear in mind the comparatively recent discovery that true peptones are formed only in very small quantities in the stomach and that albumoses very likely represent the digestive products which enter the circulation, it becomes evident why concentrated quantities of peptone disagree with patients in the manner noted above. Dismissing, therefore, the idea of utilizing pure peptone as a dietetic agent, and recognizing the clinical and experimental evidence of the nutritive worth of albumoses, we must further ask ourselves what advantage we hope to obtain and what effect we really produce by the feeding of artificially digested albumin. To begin with, most of these preparations have rather a disagreeable taste, which is a disadvantage in a food, making the addition of either meat extract or some other taste-disguising agent necessary. Further, contrary to the general belief, predigested albumin does not possess a higher nutritive worth than ordinary native albumin.

A claim which is often emphasized by manufacturers and accepted by many as being true, is that artificially digested albumin is more easily absorbed than native albumin. But here also abundant experimental and clinical data disprove these claims. The worth of an artificially digested food like that of an ordinary foodstuff is estimated by the manner and degree in which it is utilized in the gastro-intestinal tract.

Let us begin with the stomach. We are in possession of data which prove that the rate of peptone absorption from the stomach is extremely slow and considerably slower than either alcohol or the different forms of sugar. Further, it has been shown that a solution of artificially digested albumin is not absorbed more rapidly from the stomach than a nutritive equivalent of powdered meat measured in calories. The absorptive maximum of the stomach, as one would expect, bears a relation to its degree of digestive activity, and, beyond this degree, the absorption can not be forced. In regard to the intestinal absorption of artificially digested albumin, our experience is as unsatisfactory as in regard to the gastric absorption. Ellinger, for instance, has shown in some comparative tests with meat and somatose that, when each was separately given in quantities representing 8.92 grams of nitrogen, with meat the excreta contained but one gram of nitrogen, while with somatose they contained 10.6 grams of nitrogen. By still another method, that of estimating the degree of intestinal decomposition as expressed by the urinary sulphuric acids, it has been shown that somatose, a representative artificial albumin product, possesses no advantage as a nutrient over native albumin.

It will be seen, therefore, that the supposition that peptones and albumoses are more readily and more perfectly utilized than native albumin does not bear the test of careful investigation. Closely linked to this idea is the supposition that predigested albumin taxes the digestive functions less severely than unaltered albumin. This, like the other statements, is erroneous, for it is clear that the expenditure of energy lies in the secretion of the digestive fluid, not in the digestion of food after the digestive fluid has been secreted.

One might be led to contend that artificially digested albumin does not excite the glandular activity to the same degree as does native albumin. But here again we are confronted with investigations which show that the gastric acid secretions, as determined by exact chemical analysis, may be as great as and even much greater in the case of albumoses and peptones than in the case of unaltered or native albumin.

The second pronounced expenditure of energy of the digestive organs, that of motility, by which food is propelled onward from the stomach into the intestines, is as great, as we have already seen, in the case of predigested as in the case of native albumin. In particular pathologic conditions of the gastro-intestinal tract the results of the application of artificially digested albumin are not materially different from those which have been already mentioned. If we group the distinctive chemical fea-

tures of the stomach cases, we find that in one class we may have an absolute absence of acid, and in another class a normal or excessive quantity of acid. Between these two extremes we find cases with varying degrees of acidity, which we need not here define more particularly. In addition to the acidity of the stomach, the motility is of the greatest importance, for it is this muscular mechanism which determines the onward propulsion of food from the stomach into the intestines. Irrespective of the acid condition of the stomach the motility may be abnormally accelerated, slowed or entirely inhibited. It is clear that in cases of absolute cessation of motility, resulting, for instance, from a dilatation, dislocation or a pyloric stenosis, it is as useless to introduce artificially digested albumin into the stomach as it is to resort to native albumin. So also, when the motility and acidity are normal it is unnecessary to resort to artificially digested albumin. Even when the hydrochloric acid and peptone digestion is much reduced, or entirely absent, as in acute and chronic fevers, true gastritis, etc., the unaltered albumins may be perfectly utilized, as is clinically seen every day, and which both the clinical and experimental cases of total gastric extirpation have conclusively proved. It may be remarked, however, that certain particularly selected cases of an acidity with normal motility do not offer any direct objection to the use of artificially digested albumin, provided it does not prove too irritating to the gastro-intestinal canal.

Large quantities of many of the artificially digested albumins usually act as a laxative, and it is this action which recommends its moderate use in some cases or absolutely condemns its use in others. The great majority of artificially digested albumins are to be looked upon as gastro-intestinal stimulants, rather than nutrients which can be substituted for the maximum requisite quantity of albumin for any great period of time. Peptones and albumoses may be temporarily employed alone or as adjuncts to other foods in cases where there exists either a repugnance to ordinary food, where the mastication of food is difficult or impossible, or where there exists an incomplete mechanical obstruction in the œsophagus, and where it is necessary to relieve the stomach entirely from mechanical irritation. In gastric ulcer, hyperacidity and in all cases where an over-production of the gastric secretion and hydrochloric acid is to be avoided, irrespective of the condition of motility, the artificial albumin preparations are not to be used. The other contraindications have already been referred to and need not be gone over again.

The subject of the feeding of artificially prepared fats and carbohydrates, while not exactly identical with that of predigested albumin, is nevertheless very similar to it, and many of the difficulties encountered in connection with the predigested albumins are also common to both the carbohydrates and fats. Various attempts have been made to increase the ordinary rate of fat absorption by mixing it with foodstuffs and chemicals and by emulsifying it in various ways. It has been found, however, that when the motility of the stomach is unimpaired and the pancreatic and biliary secretions are normal, the absorption of unaltered, native fat, such as is contained in milk, cream, eggs, butter, etc. is very satisfactory indeed. It has been shown that as high as 300 grams (about 10 ounces) of fat, representing 2790 calories, may be absorbed from the intestinal canal in twenty-four hours.

Practically no progress has been made in the direction of fat alimentation and this subject is now generally looked upon as belonging to impenetrable territory. However unpromising as the present outlook may appear for an advance in this problem, especially in conditions of general marasmus and in hepatic and pancreatic difficulties, the future may, nevertheless, offer a means for the eventual solution of the difficulty.

The logical, artificial conversion of starch into sugar for specific, dietetic purposes dates from the time when Liebig first prepared his infant's soup, although the empirical dextrinization and saccharification of starch has been practiced from time immemorial. When native starch is introduced into the mouth it undergoes a chemical conversion into maltose. Usually, however, this conversion is not completed until it reaches the stomach, and not even then if the contents of the stomach are decidedly acid. In the latter case the conversion is not completed until it reaches the small intestine. To insure the complete conversion of unaltered starch into sugar and the absorption of the latter into the circulation, it is necessary to prepare it in a very finely powdered form. Various preparations in which this precaution has been taken are to be found on the market and give very satisfactory results. The starch contained in these preparations may either be converted into dextrin by heat during their special preparation for the invalid, or into maltose by some particular malt solution or diastase. Investigation shows that from 500 to 700 grams of unaltered starch, representing 2050-2870 calories, may be almost completely converted into sugar and absorbed by the gastro-intestinal canal in twenty-four hours.

In infants in whom, as is now generally recognized, the diastatic functions of the salivary and pancreatic glands are but imperfectly developed, it is necessary to first convert the starch into dextrin and maltose, or preferably entirely into maltose in cases where it is thought advisable to feed with artificially digested foods of this variety. In adults good results are obtained from these foods in various salivary, gastric and intestinal disturbances in which unaltered starch is not properly utilized in the organism. Both dextrin and sugar are absorbed by the stomach as well as by the intestines, and, as one would expect, the diffusibility and absorptive rate of sugar is considerably greater than that of dextrin.

Just as in the case of the ingestion of predigested albumin, much depends upon the motility and absorptive condition of the stomach as to whether or not the converted starch or native sugar is properly utilized. Large quantities of converted starch or native albumin induce very decided gastro-intestinal irritation with fermentation and diarrhea. Although the ingestion of enormous quantities of starch never induces in the healthy individual an appearance of sugar in the urine, quantities of dextrose ranging from 100 to 250 grams are sufficient to induce a decided transient glycosuria. In the rational application, however, of dietetic preparations containing native sugar or converted starch, this undesirable effect is hardly to be feared. I simply wish to emphasize these circumstances to show the physiologic limitations of forced carbohydrate alimentation.

At times cases may arise in which it is desirable to substitute honey, cane sugar, milk sugar, glucose or fruit sugar for either native or predigested starch, and, when properly selected and carefully applied, these aid very materially in increasing the total caloric value of the diet of the invalid. To this class we may add the various malt preparations, which, in connection with their diastatic properties, possess a certain nutritive value.

On the whole, artificially prepared starches given alone or mixed with specially prepared milk foods have given good results in my hands. They offer a convenient form in which to exhibit this class of dietetic preparations, and, as a change from the various other foodstuffs, are generally very much relished by patients.

It is not my object, nor would it here be in place, to attempt a criticism on the value of these and other especially prepared foods in infant feeding. When used with judgment and discretion they undoubtedly often render valuable service; when they are indiscriminately prescribed, however, they give correspondingly bad results. From all this it will be seen with what difficulty every attempt is beset which strives to lessen the labor of the gastro-intestinal canal by the exhibition of artificially digested foods.

Unfavorable as this criticism may appear to the subject of artificially prepared albumins, I trust that it will not be construed as being intended as a reflection upon the efforts of manufacturers of artificially prepared foods. There are many who are honestly and sincerely interested in the production of a superior dietetic preparation and to them this is offered as a friendly criticism, which I hope may act as a stimulus to further efforts to produce a perfect artificially digested food—one free from the untoward secondary actions we have discussed. Much remains to be said on this subject, and it might have been of interest to have included a careful analysis of every class of artificially prepared foods in our discussion. Lack of time and space did not, however, admit of this, and I dwelt upon the albumins particularly, for the reason that they are so difficult of application and so universally misunderstood.

THE SOMATIC SIGNS OF BRAIN SYPHILIS.*

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This paper takes no cognizance of inherited syphilis or of the degenerative diseases in some way caused by specific infection, but is limited to the signs of histologically definable specific invasion of the brain.

Before entering upon the details of my subject, I beg indulgence while I enunciate half a dozen postulates relating to the clinical history and more general symptomatology of cerebral lues, which seem to me so important as to be inevitable as a preface.

1. Brain syphilis is most frequent in the first year after infection, next most frequent in the second year, less frequent in the third year and so on, about 50 per cent. of all cases occurring within three years after the primary sore. After ten years of quiescence, therefore, the appearance of cerebral syphilis is exceptional.

2. In reaching a diagnosis of a brain case, absence of a history of specific infection should have no weight in the case of women, and in the case of men relatively slight importance.

3. Syphilis of the brain is not synonymous with gumma. I do not know how the myth became current in the profession, but the average practitioner works in the obscurity of the tenet that brain syphilis means gumma and is utterly oblivious of the fact that this is the least frequent form of cerebral specific lesion.

4. Most frequently brain syphilis means syphilitic arteritis. Next in frequence come syphilitic meningitis and syphilitic infiltration of the cranial nerves, while a gumma comparable to a brain tumor is least frequent.[1]

5. Paralysis from brain syphilis (excluding paralysis of the cranial nerves) is most frequently caused neither by the pressure of a gumma nor by hemorrhage, but by thrombosis due to syphilitic arteritis.

6. Consequently, many cases of syphilitic paralysis are no more amenable to treatment than are those of cerebral thrombosis due to ordinary arteriosclerosis and atheroma (influence of age excepted), which means that the important symptomatology is that which precedes and presages paralysis, because it is at such time that prompt treatment obtains brilliant, almost miraculous, results.

7. Syphilis is never a "system disease." As the Anglican sage, Sir William Gowers, puts it: "As a general rule, if we find certain structures of common function selected for isolated impairment from among others of different function, we may be sure that we have not to deal with a true specific process."

In what follows mention is made only of those symptoms deemed by the writer to be most important by reason of their frequence or diagnostic importance or because, having been overlooked or forgotten by the average practitioner, they need to be called to his attention. No categorical enumeration of symptoms is possible in compass less than a brochure and a concise grouping of them is impracticable because the only systematic thing in the symptomatology of brain syphilis is the utter want of system, which suggests the first trait.

1. *Lack of Type.*—So strikingly consistent is brain syphilis in the production of apparent inconsistencies, that any brain case having an odd mixture of psychic and somatic disorder, a sequence of signs illogical as regards either time or localization, or a bizarre appearance, disappearance, reappearance, amelioration and aggravation of symptoms, should at once awaken suspicion of lues. For cerebral syphilis nothing is impossible. Insomnia, somnolence or an alternation of them; pain without anesthesia, anesthesia without pain or painful anesthesia; spasm without paralysis, paralysis without spasm or the two combined; monoplegia, paraplegia, hemiplegia, crossed paralysis, single or multiple cranial nerve paralysis, and any imaginable grouping of them; focal signs rivaling in neatness the most dexterous work of experimental pathology or a hodge-podge of symptoms carrying only confusion to the brain anatomist and physiologist; half-way manifestations, scarcely inflammatory, more than neoplastic; these are a few of the tricks of specific lesions within the cranium. A few years ago, when the London police found the remains of a mysterious murder, the body showing inexplicable mutilations, they said "Jack the Ripper." When the neurologist meets a brain case comformable to no rule, abounding in inconsistencies, ignoring anatomy, a clinical outlaw, he is very apt to say "brain syphilis."[2]

2. *Headache.*—In about 75 per cent. of all cases of cerebral syphilis headache is present. Notoriously nocturnal in its exacerbations, it may be vesperal, or even

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1. The foregoing is not to be understood as an attempt to controvert the fact that nearly all syphilitic lesions are histologically almost identical, i. e., granulomata—cellular accumulations—but merely as a protest against the baseless popular impression that brain syphilis simply means syphilitic tumor of the brain, and that the symptomatology of brain syphilis is simply the symptomatology of brain tumor.

2. The only organic disease which can compete with syphilis in polymorphism, fluctuation and melange of types is multiple sclerosis.

diurnal and allow the patient to sleep all night. It is usually severe. The location is unimportant. In the beginning, although the lesion is constant, the headache is not; it may remain away for days or even weeks at a time and thus be mistaken for migraine or for malarial, infectious or stomachic cephalalgia. As the case advances, however, it becomes more continuous and may finally keep the patient in agony day and night. If occipital, the pain not infrequently radiates down one or both arms, even to the fingers, and may be accompanied by rigidity of the neck. Most frequently, but not always by any means, some part of the head is tender to percussion or pressure.

3. *Transient Attacks.*—These include every sort of fit, from the slightest to the most severe. They may be: 1. Attacks of dizziness, trifling or tumultuous. 2. Attacks scarcely to be distinguished from syncope. 3. Momentary losses of consciousness, exactly like petit mal. 4. Localized numbness or tingling—one side of face, one hand, etc. 5. Spasms, from the most trivial and restricted twitching to generalized violent convulsions. Typical Jacksonian fits are far from rare. Oppenheim says that the convulsions of syphilis are distinguished by their violence and frequency. My own experience is that while they are apt to be frequent and at times prolonged, the spasm is more often slight, not violent.

Some of these fits are apoplectoid rather than epileptoid. The patient suddenly has a seizure, with or without loss of consciousness, with or without spasm, but attended with loss of power more or less marked, more or less transient. Later, of course, such an attack may be more grave and the paralysis permanent. Epilepsy or apoplexy between 20 and 40 should always awaken suspicion of specific disease.

4. *Cranial Nerve Paralysis.*—Frequent, striking, imperative in their indications are palsies of the various cranial nerves, and of these oftener involved than any others are those pertaining to the eye. I need only mention that Alexander's statistics showed 72 per cent. of unilateral paralyses of the third nerve to be due to syphilis, and Uhtoff concludes from his observations that only 15 per cent. of all cases of cerebral lues are without eye symptoms. I should say that, in the absence of traumatism, at least 90 per cent. of all cases of ocular paralysis in adults are caused by brain syphilis, locomotor ataxia, general paresis, and brain tumor, and of these by far the most frequent causes are locomotor ataxia and syphilis—diseases that may usually be distinguished at a glance. Of primary optic atrophies more than 90 per cent. are certainly due to tabes, syphilis and general paresis. Tabes causes the most. Choked disc and optic neuritis may be mentioned here. They are not so very frequent. When present they are almost pathognomonic of intracranial organic disease, but serve in no way to distinguish luetic from other changes.

In this connection, too, I may speak of disturbances of the visual field. The long course of the visual tracts, almost from pole to pole of the brain, makes them liable to injury by lesions of various location and, besides, the exposed position of the optic nerves and optic tracts at the base causes them to be involved with frequency. Currently, the visual field is examined far too infrequently. Alterations in the field may be quite unknown to or erroneously interpreted by the patient and thus escape knowledge of the physician unless systematically looked for. Besides affording indubitable evidence of organic disease they may, alone or in conection with other signs make the localization easy.

All of these ocular signs are apt to have the inconsiderate disregard for anatomical facts and established types before spoken of. There is no necessary correspondence of pathological findings to clinical picture. The whole third nerve may be embedded in a gummatous meningitis and yet only part of the fibers suffer, while complete paralysis in all its branches may depend upon almost undiscoverable changes. Unaccountable alterations in the visual field, blindness without changes in the fundus, appearance and disappearance of symptoms so sudden as to suggest only functional disease are some of the many manifestations showing the capricious character of brain syphilis.

Less frequently than the ocular nerves, but still quite often, are the fifth and seventh attacked, and with the latter the auditory is very apt to be involved. The first sign of involvement of the fifth is paresthesia or pain in the distribution of one of its branches. As the disease progresses these irritation symptoms spread to other branches. With the pain, maybe shortly preceding or following it, comes impairment of the tactile sense, the patient then presenting anesthesia dolorosa—a complex almost invariably due to organic disease of the nerve trunk. The fifth is affected on one side only. Paralysis of the seventh is, of course, of the peripheral type, and may affect both nerves, either alternately or simultaneously, although unilateral trouble is the rule. Lesion of the auditory, causing tinnitus, deafness, aural vertigo, or all three, is rare without implication of the facial as well.

Cranial nerves below the eighth are affected with less frequency, but none are exempt. Dysphagia, partial paralysis of the tongue, alteration in the pulse rate, laryngeal paresis, partial paralysis of the sterno-mastoid and trapezius muscles and cerebellar symptoms, alone or in combination, are produced when syphilis invades the posterior fossa of the skull. In case the basilar artery and its branches bear the brunt of the attack, materially interfering with the bulbar and pontine circulation, the grouping of cranial nerve signs will be that of bulbar paralysis—the glossolabio-laryngeal complex.

Before leaving the subject of cranial nerves I can not refrain from again calling attention to the extreme irregularity of the voicings of syphilis and to the value of this lack of system as a diagnostic pointer. While cerebral lues may affect the cranial nerves as would any basilar disease, invading those close together and causing gradually increasing symptoms as the disease progresses, it more frequently acts in a more erratic way. One nerve on one side and quite a different nerve on the other; one anterior and one posterior nerve on the same side; paralysis of one nerve, disappearance of this paralysis and then paralysis of another, nearby or at a distance; paralysis of some fibers of one nerve and then serious involvement of another without the first growing any worse; these are some characteristic vagaries.

5. *Addition of Spinal-Cord Symptoms.*—This is perhaps as good a place as any to speak of the complications of cerebral with spinal syphilis. While it savors of Erin to speak of spinal symptoms as part of the signs of brain disease, it is a fact that syphilitic disease of the cerebral meninges does often spread to the spinal membranes. When, therefore, to the characteristic signs of cerebral disease are added symptoms pointing to disease of the cord or its membranes, the diagnostician is materially aided in coming to a conclusion.

6. *Impending or Accomplished Thrombosis.*—As be-

fore stated, arteritis or arterial cellular infiltration is the most frequent form of brain syphilis. Syphilitic meningitis must inevitably compromise arteries and veins and even a gumma may disclose itself principally by the invasion of adjacent vessels. Obviously, then, many of the signs of cerebral lues will be those caused by local abnormalities of circulation, and they resolve themselves almost entirely into the signs of impeded circulation and arterial occlusion. Most of these signs have already been mentioned, but it seems advisable to review them from the standpoint of arterial lesions. Indeed, it is well to frequently remind ourselves that although the symptoms of cerebral syphilis are due entirely to injury of nerve cells and fibers, the disease is not primarily one of the nerve elements at all, but of extra-neural tissues—arteries, veins, membranes, nerve sheaths. To involvement of arteries at the base of the brain, Heubner attributed most of the intellectual and mental symptoms of brain syphilis; a great many of the early and late somatic signs are directly attributable to partial or complete occlusion of arteries. Among the earlier, besides headache, are transient attacks of dizziness, of numbness of one hand, one foot, one side of the face or tongue; transient aphasia or paraphasia, alalia or dysphagia; temporary diplopia, ptosis, or dilatation of one pupil; sudden weakness of one hand or leg, or partial hemiplegia which rapidly disappears; localized clonic spasm or twitching —all of the foregoing without loss of consciousness. As the disease is never confined to one arterial twig and very often affects the nutrient vessels of parts differing widely in function, these early, so-called premonitory signs may present peculiar associations. Dilatation of one pupil and paresthesia of a hand, numbness of the left face and clumsiness of the right hand, partial aphasia and slight dysphagia, diplopia and weakness of one leg, may be noted as illustrations.

Then there may be a general neurasthenic and myasthenic condition with insomnia or moderate somnolence without focal signs. Later come more pronounced symptoms; the dizzy spells become brief losses of consciousness, the pareses are less transient and disorders of speech more enduring. It is only one step more to a grave apoplectic attack from thrombosis of a considerable artery. If the vessel belong to the cortical circulation and be not too large, such an attack may be rapidly recovered from, but if such considerable vessel supplies the basal ganglia or cranial nuclei, the disability is permanent, and if the artery be a very large one of any part the result is permanent disability or death. As in thrombosis from lesions other than specific, a complete hemiplegia may occur without loss of consciousness, or with only moderate confusion or somnolence. This is not true of hemorrhage. In many cases the hemiplegia comes on in such a way as to clearly indicate either temporary arrest of circulation or partial occlusion of an artery followed by its complete closure or, what I believe to be more frequent, thrombosis of a small branch followed by occlusion of adjoining branches or of the main artery by extension of the intra-arterial clot. Such a course of intracranial proceedings is evidenced by restricted or very slight paralysis, followed in some hours or days by more extended or complete disability.

I believe that largely to arterial invasion is to be attributed another of the frequently observed features of brain syphilis, viz., progress by separate steps or increments. Without appropriate treatment, cerebral syphilis progresses more or less rapidly for the worse, but never uniformly, always by fits and starts, often with intercurrent improvement. Not rarely these increments affect different parts. A small artery becomes so badly damaged that circulation in it is stopped. Before a second calamity takes place in that immediate vicinity, another arterial twig at some distance suddenly goes out of commission, adding one more sign to the clinical picture, while that caused by the first stoppage may be improving.

Of material assistance in some of the earlier cases are increase of the deep reflexes and incoördination. The patient may make complaints such as indicate merely functional disease and the physician may detect neither anesthesia nor motor impairment, but careful examination may show increased deep reflexes on one side, as compared with the other, or slight incoördination in finer movements.

7. *Peculiar Stupor.*—While not wishing to trench upon the topic of Dr. Dewey, which none can handle so well as he, I would slight my own subject were I not to mention the somnolent, semi-stuporous condition which occurs more frequently in cerebral lues than in any other brain disease. Combined with one or more of the foregoing somatic signs it is well-nigh pathognomonic and even alone is strongly suggestive. In this condition the patient seems to be almost comatose, but can be roused and when once awake is practically rational, although he may be decidedly irritable, not to say bellicose. The condition was long ago likened to a drunken state; after being roused and responding to enquiries, the patient at once lapses into his previous stupor. Without fever and preceded by or combined with severe headache, the symptom means grave organic brain disease, in numerous instances, syphilis.

8. *Fever.*—Cerebral syphilis may be considered to be an afebrile disease. Fever is exceptional unless pons or medulla oblongata be involved, when rise of temperature may be slight or considerable. In some cases the fever has seemed to me to be caused by bad condition of the gastro-intestinal tract and absorption therefrom.

9. *Vomiting.*—This occurs in many cases, more frequently when the posterior fossa is invaded and when a large gumma or extensive meningitis is present. Such emesis, although of cerebral causation, may take place only when the stomach is full and may be determined more by one sort of food than another. Nor should it be forgotten that cerebral vomiting is not necessarily projectile.

10. *Polydipsia, polyuria* and *polyphagia* are not unusual results of brain syphilis, the last being the least frequent.

11. *Insomnia* is not rare, aside from the inability to sleep on account of headache, and besides vertiginous attacks, constant dizziness may be present.

THE PSYCHOSIS IN CEREBRAL SYPHILIS.*

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When I came recently to consider attentively the subject assigned me in this discussion, I was so doubtful as to the production of anything of value that I asked the chairman to excuse me, but as both the present chairman and the chairman of last year renewed their request, I have complied with their wishes as well as possible.

When one attempts to lay down the lines upon which

* Read at the Fifty-second Annual Meeting of the American Medical Association, in the Section on Nervous and Mental Diseases, and approved for publication by the Executive Committee: Drs. Frederick Peterson, Hugh T. Patrick and H. A. Tomlinson.

the subject should be treated, several questions arise which require to be first taken into consideration. One is the evidence of syphilis. Another, the very frequent existence in these cases of causes other than syphilis which have their share in determining the mental state—such as alcoholism; senile changes; arterial disease; kidney and heart disease and tumors, of non-specific origin.

If the rule were made and followed of first catching your specific lesion and then excluding alcoholism and non-specific vascular changes, etc., a portion of the foundation for much writing on this subject would crumble away. On the other hand, syphilis is not and can not be excluded, even when neither history of it nor somatic signs are attainable. Fournier states that syphilitic disease of the nervous system is found more frequently than are the external signs of syphilis. Berkely attributes to syphilis all cases under 40 of hemiplegia or monoplegia and mental disturbance, where cardiac and renal disease were not found; also obscure dementias between the years of 25 and 40. This method of reaching a diagnosis must have an element of uncertainty, though doubtless in a general way the deductions are correct. There are probably as many cases in which syphilis is concealed or remains undiscovered as there are incorrectly diagnosed, but striking a balance by this method is not satisfactory for our present purpose.

It would seem that the reasoning adopted in many cases was something like this: "Here is a case of organic brain disease, coarse or fine, paresis, hemiplegia, monoplegia, suspected tumor or vascular lesion. It is antecedentally and consequentially probable the patient has had syphilis; therefore this is cerebral syphilis." Then the mental manifestations are sometimes taken up and treated as due to syphilis without positive evidence either before death or postmortem, and perhaps without considering whether the same mental states are not closely paralleled by cases certainly non-specific, or whether the findings may not be due to general and not specific causes, even though syphilis be present.

One instance of syphilitic psychosis that may be mentioned here is the mental state found in syphilitic tumor of the brain; but can any one distinguish between the psychopathic effects of a specific and a non-specific tumor? Again, how are the arterial disease due to syphilis and that due to other causes to be differentiated in their mental phenomena? Consider in the same way the effects of edema and intra-cranial pressure, with interruption or irritation of tangential tracts; also those of the various toxins. These morbific agents must destroy or derange the "cytopsyche" and the "histopsyche," assumed by some German writers to preside over the cell and tissue life (and I believe countenanced even by Haeckel); but the relation, if any, between the unconscious soul ascribed to the units of structure and the conscious soul that has for its instrument the entire brain, is something as yet beyond scrutiny. The cœnesthetic sense which is essential to soundness of mind is impaired in all psychoses. The association tracts belonging to the various brain centers are interrupted by syphilitic connective tissue overgrowth, or by poison or malnutrition, from primary degeneration of neurons, but how does this differ from the disease or destruction of association tracts from other brain changes, or from neuron degeneration from other poisons?

Berkely[1] in his recent work states: "Lues never directly affects nervous tissues." Moebius, as quoted by Bannister,[2] treating paresis as a syphilitic toxin disease, asserts: "There is only one kind of general paralysis and only those have it who have previously had syphilis." Is general paralysis a psychosis of syphilis simply? If so, we have at least one syphilitic form of insanity, but Moebius' claim is by no means fully substantiated. Probably as many pathologists would be found to deny as there are to affirm that tabes and general paralysis are exclusively syphilitic in their origin. Assuming that these diseases may be due to other causes than syphilis, can any one draw a clinical picture of these diseases when caused and when not caused by syphilis? It seems to me that if no one can distinguish between specific and non-specific paresis or tabes, where the pathology is comparatively well defined, it is all the more impossible to define the part syphilis may play in the forms of mental malady where the pathogenesis is more obscure. Consider further, syphilitic hypochondriasis, so-called "syphiliophobia," and insanity occurring with the very onset of constitutional syphilis. In all such cases lowered brain nutrition, perhaps purely functional, is capable of accounting for the conditions, and it is not necessary to call in syphilis to explain them. High authorities affirm and deny that soft chancre or suppurating buboes are followed by constitutional syphilis. The views of Fournier—as good an authority as any—have changed from one extreme to another, and of late a new perplexity is introduced by affirming that hereditary syphilis plays an important part in the development of psychoses, especially in the adolescent period. Here again an obstacle to the full understanding of the case arises, because the proof of hereditary syphilis is not always convincing, since dementia, praecox, paranoia, and hebephrenia have not as yet been studied so that those of specific and non-specific origin can be differentiated, neither are writers agreed as to the adolescent form of paresis.

In a recent paper by A. W. Hurd[3] it is stated that syphilis may cause, 1, any simple psychosis; 2, paresis; 3, pseudo-paresis. By a simple psychosis I take it is meant one which has nothing characteristic of syphilis. Paresis is the same thing, whether caused by syphilis or not. Finally, in "pseudo-paresis" it is claimed to be characteristic to find a confused mental picture, as of paresis "toned down," or cerebral syphilis "heightened"; to find that motor disorders or cranial nerve symptoms precede; that hypochondria or acute delirium may appear early; that paralysis rather than ataxia plays the leading rôle; that mental dulness and a "vacant expression" are more noticeable, while we find that a gradual change in disposition, grandiose ideas and a sense of well-being are more marked in paresis. It is noted that motor symptoms, cranial nerve symptoms and ataxia are utilized to aid in diagnosis, but these I am not able to take into account in treating of purely mental phenomena, as my subject requires.

In a paper by J. H. McBride,[4] read in this Section one year ago, it is stated: "Syphilitic insanity may mimic every known form of mental derangement;" he also says that there is "nothing characteristic in the mania" or the depression due to syphilis, but that, if the entire history be considered, irregular features will be found; that in mania there will be the earlier appearance of confusion or weakness, with intervals of quiet

1. H. J. Berkely: "Mental Disease," p. 210.

2. H. M. Bannister: General Paralysis a Toxin Disease, Am. Jour. Insanity, vol. l, p. 477.

3. "Paresis and Cerebral Syphilis," Buffalo Medical Journal, April, 1901, p. 631.

4. Mental Symptoms of Cerebral Syphilis. THE JOURNAL A. M. A., Feb. 2, 1901, p. 297.

and semi-lucidity; in melancholia, brief depression, much confusion, outbursts of excitement, periods of stupor and early dementia. "These," he says, "may be regarded often as circumstantial evidence of a specific origin." The writer also mentions "loss of mental power, of self-control, of the self-regarding virtues, of moral sense, the detachment of life from the delusions," and many other morbid mental phenomena as "prominent characteristics." There is scarcely one of these phenomena or any combination of them which may not appear in an equally irregular manner in cases where there is no question of syphilis. A "confused mental picture," a "toning down" or "heightening" of various symptoms, an irregularity in the order they assume, predominance of paralysis or of ataxia or of cranial nerve symptoms, "hypochondria," "acute delirium," "vacant expression," etc., are symptoms that purely non-specific psychoses or those arising from alcoholism or non-specific arterial changes may present. So with the peculiarity of seeming to mimic other forms of insanity; and of irregular and atypical features or succession of symptoms.

The arguments in favor of syphilis from the "bizarre" and irregular character can have but small weight since "bizarrerie" is something we constantly see in cases where the question of syphilis is known not to enter, and certainly "loss of mental power" or of "moral sense" and of "the self-regarding virtues" have in them nothing that would aid in the diagnosis of a syphilitic psychosis.

If these two able observers find nothing in the mental phenomena more distinctive, one is inclined to think that it is because there is possibly nothing that is distinctive.

The tendency to "remissions" and to periods of return to apparent sanity does seem to mark syphilitic cases especially, though also known in those that are not syphilitic. In this matter again there is a difference of opinion as to whether the return to sanity is complete. Some writers, and among them Mott, claim that a certain dementia or weakening always remains; but I have known of cases where the return to normal condition was so complete that no expert could tell the difference, and such are reported by others. Mott explains these fluctuations by the fact that when the remissions occur, the disease is external to the nerve cell and functional in its nature.

It is doubtless true that the permanency of insanity and the failure to recover in simple acquired psychoses, may be due to the complication of syphilis, either hereditary or acquired. Some writers have given failure to recover as an indication or presumption of syphilis, but this fact itself helps not at all in the diagnosis of syphilis. Failure to recover is unhappily too frequent in all forms of insanity.

A correspondence may exist between the difference and variable nature of psychic symptoms and the irregularity of the pathologic changes of syphilis—so largely vascular in their origin. The irregular and temporary attacks of aphasia are somewhat characteristic, but are also found in other cases.

Some writers who claim lacunæ in the memory as characteristic, fail to note that lapses and gaps of memory are common in other forms, particularly alcoholic and epileptic forms, and yet these latter will be apt to be associated with acute attacks or other accompanying signs. It is perhaps questionable whether systematized delusions are ever found in syphilitic brain disease, unless there be a background of paranoia or degeneracy.

It is agreed that the anterior portions of the brain, frontal and central, are more open to syphilitic infection and this gives some characteristic significance to the frequent dulness and stupor. Again, the admitted correspondence between senility and syphilitic insanity speaks only for lack of characteristic features. Spitzka[5] gives the figures of Snell, who found that 75 per cent. of the cases of paretic dementia were due to syphilis; of Erb, who found a similar proportion of cases of tabes due to syphilis; of Mendel, who found 117 out of 291 such patients were syphilitic, while on the other hand Ripping found only 12 per cent. with a syphilitic history. Spitzka himself found syphilis in 33 per cent. of the pauper insane of New York. Clouston, in over 3000 cases, found but 16 of syphilitic insanity. Spitzka remarks that the attempt to test the question of syphilis by specific treatment fails, because in several cases spontaneous remissions occurred and in others the most energetic treatment gave no results. Then, too, specific treatment has been found useful where infection could be positively excluded. Finally, Ripping claims to have found syphilitic patients recover from insanity where no specific treatment was applied.

These statements, as well as innumerable others to be found in the literature, tend to throw doubt on claims that any given psychopathic condition is syphilitic, and yet as was remarked by Kraft-Ebing and agreed to by Mott: "The more we study paresis the more we find it associated with syphilis;" and the former declares with a measure of truth that civilization and "syphilization" go together, however discreditable this fact may be to the former.

The recent report of the Pathologic Laboratory of the London County Asylums by F. W. Mott[6] contains valuable information concerning the pathology of syphilis, the structural changes and to some extent the mental symptoms. That which seems most pertinent to the present inquiry in Mott's work is the placing in clearer light the fact that syphilitic brain disease, as distinguished from paresis, affects, primarily, vessels, lymphatics and membranes—mesoblastic structures—and the degeneration of neurons is secondary. Paresis, on the other hand, is a primary decay of the neuron itself, but it is not clear that the mental symptoms of the two processes can be differentiated. Indeed, Mott gives the phenomena of irritation and other psychic symptoms as characteristic of early changes in both. The primary progressive degeneration of neurons starts at the highest and latest developed structures, speech and association centers, and attacks by preference the frontal and central regions. Mott describes stupor, dementia, weakening or loss of memory and intellect, and many other symptoms, but does not give any distinctive characteristic of different syphilitic processes; neither can we distinguish these as being different according as syphilis is or is not found. Mott considers "stress" to be the important proximate factor in the development of brain disease, in one affected with syphilis. Stress is, however, perhaps equally the proximate cause in psychoses where syphilis is not concerned.

Since as yet we have in psychiatry so little in the nature of known definite psychopathic symptoms which can be associated with molecular or even coarse changes in the brain; since as yet we know nothing of the *modus operandi* of mental changes as associated with pathologic findings, and since our classifications of mental

5. E. C. Spitzka: Manual of Insanity, p. 244.

6. Annual report of the Pathologic Laboratory of the London County Asylums, 1900. Abstracted by J. H. McBride, Southern Cal. Pract., April, 1901.

disease are in a purely tentative and conjectural condition, it seems premature to attempt to formulate syphilitic psychoses. The very inconsistency and lack of type in symptoms taken by some to be indications of syphilis, are interpreted by Kraepelin to be characteristic of chronic and permanent mental deterioration—Verbloedung's processe. We all meet with cases for which there seems to be no place by any method of classification as yet devised.

Clinical psychiatry must unite psychical events in the course of each recognized psychosis, with a negative or positive report from the autopsy table, before the influence of syphilis on mental operations can be determined. We can not doubt but that psychic life is intimately associated with matter, i. e., with brain cells, but we are as yet without data which would enable us to connect objectively the functionating of those cells, either in health or disease, with any changes in their form or substance. Even the pathology of general paralysis, the best known of all, is only indefinite as to mental changes and their relation to physical changes.

I am aware that I have only touched the borders of this far-reaching subject, and that most of what I have written is only of negative value, if of any at all.

I have sought something more tangible in reviewing my records of the past six years, covering over 1200 cases of all forms of nervous and mental disease. I found among these 45 cases of well-substantiated, constitutional syphilis. Doubtless an equal or greater number which I rejected for want of definite knowledge might have been included without serious error, but considering only these 45 cases, they were made up as follows: 17 were diagnosed as paresis; 12 as syphilitic brain disease with symptoms of organic lesion; 7 were cases of psychoses with marked delusional characteristics and without symptoms of brain syphilis, the mental symptoms taking the form of delirium, stupor, extremes of exaltation and depression, aphasic attacks and mild dementia; 4 having ophthalmoplegia and optic neuritis; 4 were cases of hypochondriacal melancholia, and of these, 3 temporarily improved, the other was a morphin case; 2 were cases of tabes with emotional weakening as the only mental failure, and there was one case each of slight dementia, melancholia and dementia paralytica of senile form. The type of mental disorder in the 17 cases of paresis was expansive in all except 2; marked confusional condition was present in the two depressed cases, and in 9 of the expansive cases confusion was also a very prominent feature.

These cases were gone over and tabulated with reference to the following points: The type of hallucinations and delusions, where present; the cranial nerve symptoms; the evidence in each case of syphilis; the habits and occupation; the outcome as to the history of marked stress as a factor producing the mental disease, and the time of infection prior to appearance of psychopathic symptoms.

I found, however, that these tables possessed but little significance, partly because no useful deductions could be made from such small numbers, and partly because the exclusion of so large a number of probable cases for want of a positive diagnosis seemed to me in a measure to vitiate the result.

Progress in Peru.—The Lima medical papers are rejoicing over the accession of a portable disinfecting oven, and the bacteriologic laboratory recently installed in the public hospital, which, by the way, bears the unique name of the Second of May Hospital—"Dos de Mayo."

SYPHILIS OF THE NERVOUS SYSTEM—ITS GENERAL PATHOLOGY, WITH REMARKS ON TREATMENT.*

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The initial lesion of syphilis must be viewed, in the light of our present knowledge, as a wound plus infection, the infecting material being probably of bacterial origin.

The first nervous changes following such infection are localized at the sight of the initial lesion, and have been well described by Berkley.[1] Briefly, these changes consist of a combined interstitial and parenchymatous neuritis, due, in the investigator's opinion, to, 1, compression by the round-celled exudate; 2, endarteritis, interfering with nutrition; 3, local effect of a "virus."

The conditions found in the nerves are described as, 1, obliteration of lymph spaces; 2, disappearance of axons; 3, a "glassy" degenerated appearance of the myelin.

These changes were limited to the nerves imbedded in the round-celled exudate; those nerves not so surrounded being normal, or approximately so. Root-neuritis, cranial and spinal, and peripheral mono-neuritis may occur as secondary lesions.

Syphilitic multiple neuritis has also been reported, one case by Fry,[2] a year after the initial lesion; and a case by Cestan,[3] who notes three others with more or less doubt. The extreme rarity of the affection and the possibility of other causes in any given case tend to render the diagnosis problematic.

The second evidence we have of invasion of the nervous system by the disease or its products, is in the production of fever—"syphilitic fever"—often overlooked and sometimes misinterpreted.

The actual pathologic process at work here is unknown. Presumably, in the proliferation of the microbes of the disease, a toxin is set free in the tissues, which, carried by the blood stream to the cerebrospinal axis, irritates certain hypothetical thermo-genetic centers, or depresses certain other centers equally hypothetical, which are assumed to control or direct thermolysis. Another explanation to be considered leaves out of account any such "centers" and attributes the febrile process to alterations in the chemical constitution of the tissues generally, by the toxin of the disease. These alterations giving rise to perversions of metabolism with increased heat production or diminished heat dissipation.[4]

The third group of processes to be considered, that which is by far the most important to us, in a practical sense, is the inflammatory group whose characteristic lesion we call a "gumma."

The great fact of importance in this group, as regards nervous syphilis, is that gummatous syphilis in its beginning is a vascular syphilis.

Since all vascular organs are, in their developmental nature, of connective tissue (mesoblastic) type, it follows, as a corollary, that vascular syphilis is necessarily connective tissue syphilis. Hence to the tissues of this type (blood, dermis, basement membrane, areolar tissue, bone and cartilage), must we look for the initiation of the pathologic processes which invade the nervous, as well as the other anatomical systems.

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Nervous tissue proper, therefore, owing to its non-vascularity, is never the primary seat of inflammatory processes, whether these be due to syphilis or to other causes.

While it may be said to be an accepted axiom therefore, that gummatous syphilis is primarily vascular syphilis, it does not follow that it must be an arteritis or a phlebitis. It is often a lymphangitis, using this term in its broad sense, to cover involvement of the lymph-channels generally of the nerve centers. Thus the so-called peri-arteritis is often a lymphangitis in its inception, beginning in the peri-arterial lymph sheath. There are reasons for the belief that gummatous meningitis of the diffuse form may be also of lymphangitic type. As regards the best known vascular lesion, arteritis, the discussion as to whether a "peri-arteritis" (Baumgarten), or an endarteritis (Heubner), is the more characteristic vascular lesion of syphilis, would seem to be a superfluous refinement in localization from either a diagnostic or a therapeutic view-point, since in either event the exudate is within the wall (not within the lumen) of the vessel, and eventually involves its entire thickness.

The important event in syphilitic arteritis is the impairment of the nutritional integrity of the endothelial lining, whereby thrombosis with its resulting necrotic softening is directly produced.

It is customary to picture the changes in the vessel wall as a heaping up of proliferated cells, presumably derived from the deep endothelial layers of the inner coat. It is not probable, however, that the closure of the vessel is ever due merely to mechanical effects of this accumulation. Long before closure would occur from this cause, the inner lining, which must be continually shed, molecule by molecule, has been replaced by the rapidly reproduced and hence imperfect cells of the deeper layers. These again are being gradually deprived of their nutrition—from the vasa vasorum via the intramural lymph spaces—by reason of the increasing pressure of the exudate in the middle and other layers of the vessel wall, and possibly in addition are directly affected by the toxin of the disease. Hence, it is only a question of time that the inner wall of the vessel at the affected area comes to be lined by an endothelium defective in nutrition, possibly actually necrotic in places. Thrombosis, then, is the inevitable result.

As regards the direct local cause of the endarteritis, we must assume that the active agents in its production, which are at present supposed to be bacteria, are carried to the points of inflammatory reaction by the vasa vasorum.

We reject the main blood stream (of the lumen) as a source of the infection of the wall, by reason of the fact that inflammation presupposes stasis followed by exudation. Stasis, however, is not likely to occur in a large or moderate-sized artery. It is only in the capillary plexuses of the vasa vasorum and their nutritive successors, the intramural lymph spaces; or again, in the terminal capillary plexuses of the ordinary artery, that conditions favorable to stasis occur.

Pathologically, therefore, syphilis of the central nervous system is primarily a lymphangitis, phlebitis or arteritis, or any combination of these. The product of the inflammation is an exudate consisting chiefly of small round cells with a tendency to, 1, central necrosis, when in massive collections—gummatous tumor—or, 2, a tendency to fibroid organization when spread out in thin layers—gummatous meningitis, diffuse arteritis, etc.

In accordance, therefore, with the stage and progress of the process we may have, 1, a gummatous thickening, plaque or tumor; 2, a caseous abscess; 3, a cicatrix. In either event the nervous manifestations are secondary and due to, 1, thrombotic occlusion of nutrient vessels causing necrotic softening in their areas of distribution; 2, mechanical pressure causing secondary degeneration of neurons or their processes; 3, interference with the return circulation in lymph channels, causing local toxic states; 4, arteriosclerosis of varying type, probably responsible for various nerve degenerations of chronic character, e. g., nuclear palsies, locomotor ataxia, paresis, etc.

The question naturally arises: Is all inflammatory syphilis essentially alike, i. e., due to gummatous deposits of varying shape, in and around arterial, venous or lymphatic channels? This must probably be answered in the affirmative; the differing "types" of gummatous disease, meningitis, massive gumma, and arteritis "obliterans" being variations due to differences in size, number and distribution of foci. The possibility of a "mixed" infection in some cases must be conceded; to this abscesses proper may be due at times.

Hereditary syphilis as it affects the nervous system, may develop as a gummatous arteritis or meningitis, pathologically identical with the acquired form in adults. Many of the infantile hemiplegias and spastic paraplegias are probably of this type. Defects of a developmental nature, however, also occur in children, showing themselves in the various forms of idiocy and imbecility, which probably rest in great part on a foundation of vascular degeneration. It is quite probable that the proportion of children showing distinct syphilitic lesions of hereditary origin is commonly overestimated, as compared with the non-syphilitic from the same class of parents. Almost every practitioner can recall numerous cases where the children of syphilitic parents have all escaped; and other cases where one child is marked with, and others free from, syphilis. Statistics bearing on this point would be desirable.

We must not lose sight of the fact that gross lesions, i. e., meningitis, gumma, arteritis followed by softening, are not the only results of syphilitic infection of the nerve centers. Encephalitis, in multiple and minute foci, situated about the terminal capillary plexuses of the cortex, may probably occur, damaging various association tracts and operating as an important factor in the production of syphilitic epilepsy, some of the psychoses, etc. Accurate observations on this form of encephalitis would be desirable.

What is the most frequent site of the gummatous process in the nerve centers? This question is evidently a difficult one to answer, since many cases present multiple lesions. Most authors state that, 1, basilar meningitis is the most frequent cerebral lesion. Next follow in order, 2, meningo-encephalitis of the convexity; 3, arteritis with thrombosis and softening. In the cord, the most frequent lesion is said to be a meningo-myelitis; next to that arteritis with local softening. The writer's experience is at variance with this statement as shown by the following analysis: In 100 consecutive cases, about equally distributed between hospital and private practice, the preponderating lesion was diagnosed as follows:

Thrombosis with softening (hemiplegia)	41
Meningo-encephalitis of vertex	23

Basal meningitis	11
Cerebrospinal disseminated lesions	10
Focal myelitis (including also "transverse")	12
Meningo-myelitis	3

Excluded from the enumeration, but in serial connection with it are:

Massive gumma	1
Psychoses (probably of meningitic or encephalitic origin)	2

Another question of importance is: Has chronic diffuse syphilitic arteritis any distinguishing features by which it may be recognized from arteriosclerosis due to other causes (chronic uremia, gout, alcohol, etc.)? To this most competent observers reply in the negative.

It has been assumed[5] that, in the localized softening following a syphilitic thrombosis, we have an "ordinary" or non-specific lesion to combat. Is this true? Probably it is, for a short time, of the softened area itself. But what follows this softening? In the surrounding tissue, hyperemia, exudation, proliferation; in short, secondary inflammation. Is this non-specific? It would be remarkable to think it was when we reflect upon the proximity of the original infected vessel. We all know the tendency of ordinary external wounds in a syphilitic to take on the "specific" inflammation; and how often they heal slowly or refuse to heal, until treated with anti-syphilitic remedies.

NATURAL HISTORY OF SYPHILIS.

During the early or "primary" period of the disease, following immediately upon the infection, we must assume the local proliferation of the microbes (bacteria?) and the collateral production of a toxin which produces a localized degenerative neuritis as well as the "general" symptoms, fever, malaise, muscular pains, etc. This period probably terminates, as does the febrile stage of the ordinary exanthemata, by reason of the production of an antitoxin which terminates the life or activity of the micro-organisms in great part, leaving, however, a few, possibly in a "sporule" stage for the future development of foci of gummatous inflammation in various situations. This is probably the natural course of the disease when uninfluenced by treatment of any kind.

The writer has seen such a case, untreated for thirty years, in a man of 55, who had received internal medicine (nature unknown) for only a couple of weeks at the time of the initial lesion. All these years he had been subject to repeated crops of subcutaneous and intramuscular gummata which had caseated and cicatrized, with little or no interference with his general health, and which he ascribed to hereditary "scrofula" in his system, of which there was, in my opinion, no evidence. When he consulted me for a paraphasia verbalis without paralysis due to slight thrombotic softening, he had two of these caseating gummata on the back, each as large as a pigeon's egg, of which he made no mention, so accustomed had he been to the presence of similar lesions for thirty years. On stripping him for examination these were discovered, and in addition, dozens of characteristic cicatrices, and intra-muscular indurations, situated on trunk and extremities, marking the sites of former gummata. He made a fair recovery from the aphasic symptoms and was kept upon mercury and iodids at intervals for about two years, during which time he enjoyed fair health. He had all his life an especial liking and capacity for mathematics, and this was apparently not diminished. As he lived at a distance he became somewhat irregular in his visits and when he consulted me again, after an absence of some months, he presented a marked motor aphasia, with slight right hemiplegia and a mild degree of dementia, probably all due to multiple foci of softening. Death followed in a few months.

The gummatous process is, therefore, in a measure self-limited. It is also in its inception to be viewed as a conservative process; like all inflammation it is evidence of resistance to an invader. When this disappears the gummatous process, like other inflammatory actions, ceases. What checks it? Three things:

1. The insufficient blood supply at its center, leading to necrotic softening and caseation.

2. The possible (even probable) development of an antitoxin which checks the local proliferation of microbes.

3. Removal of the necrotic tissue in part, by the leucocytes of the surrounding exudate, or, in the nerve centers, possibly by the mossy glia cells (scavenger cells of Bevan Lewis).

4. Organization into cicatricial tissue of the remaining elements of the inflammatory exudate.

Pathology is certainly of greatest value when it points the way to a rational therapy. May we hasten in any manner the more desirable of these processes? This, it seems to me, is the therapeutic problem to be solved.

While the limits assigned to the present paper forbid any extended or detailed remarks on treatment, some general considerations of the subject may be permissible.

We have come to speak so confidently of treatment by mercurials and iodids as "specific" treatment, that it does some violence to our therapeutic optimism to question their "specific" attribute. And yet it seems that we must logically admit this to be a fragile idol, likely to be shattered by the cold logic of the laboratory. Do these remedies destroy the germs of the disease? Few will claim this at the present day. The hypothesis of Gowers and others, that they may destroy the germs but not the "spores," is an attempt to explain the obtrusive fact that they do not, as a rule, prevent future gummatous developments. How then may mercurials and iodids act in gummatous disease? They are erroneously called 'absorbents," but we know that no drug is an absorbent. The very term absorbent, as applied to drugs, is almost as objectionable as that other absurdity, "keeping the bowels in a soluble condition."

What useful purposes may these remedies subserve in promoting the disappearance of syphilitic exudates? Simply and solely to destroy the already feeble vitality in the newly developed cells of the gumma, to poison them in fact, after which fatty degeneration, necrosis and liquefaction naturally follow. The lymph spaces, the real absorbents, do the rest. Thus the available material for future cicatricial tissue is reduced to a minimum, with corresponding lessening of future pressure and nerve degeneration.

How may these remedies act in the florid stage of the disease? Simply in the same way, so far as we know, namely, by promoting disappearance of inflammatory accumulations. Few will claim that they actually destroy the germs.

It is conceivable, however, that by stimulating excretion generally by the bowels, kidneys, and skin, they may also promote elimination of a considerable portion of the toxin proper. We should not lose sight of the fact, moreover, that these agents used within proper

limits may stimulate the activity of the hemopoetic system, producing a degree of leucocytosis which may be useful in combating the microbes proper. Thus are we relieved of any necessity for a therapeutic nihilism.

In some cases the natural vigor of the patient, assisted by remedies judiciously used and hygienic measures, may apparently exhaust the stock of microbes and the patient remain well of active syphilis at least.

Does this render him secure from degenerative changes? Statistics appear to show that it does not—(Collins[10]). What then may be the cause of such degenerative diseases as locomotor ataxia, paresis, etc.? The hypothesis most in favor at the present day, is that of Strümpell that it is a post-syphilitic toxin, a by-product, so to speak, of the vanished syphilis, which, circulating in the blood, poisons the neuron, but does not excite inflammation. This hypothesis is untenable in the cases, well attested, of locomotor ataxia and paresis, without preceding syphilis. A more plausible explanation, to the present writer at least, lies in the fact of extensive fibroid and hyaline vascular changes, which affect the arteries both in syphilitic and non-syphilitic subjects. (*Vide* Berkley.[7]) The syphilitic toxin, while it must be conceded a frequent cause, is certainly not the only cause of vascular degeneration.

A long-standing and widespread arteriosclerosis or hyaline degeneration is a sufficient factor for the production of degenerative nervous disease, without the intervention, at the time, of any toxin. Thus we may account for many cases of degenerative nervous disease without necessarily invoking the aid of a post-syphilitic toxin, or of syphilis in any form.

Are mercurials and iodids of value in these degenerative nervous diseases? Modern neurological opinion tends to the view that they are not. From what has been said of the modus operandi of these remedies, it is difficult to ascribe to them any virtue in non-inflammatory nervous lesions, where the neurons are undergoing a molecular death from starvation. What good effects are observed from them are in all probability due to collateral influences on secretion and excretion, apart from the nervous degeneration proper.

As collateral at least to the present topic, we may ask, should we withhold mercurials and iodids in a central softening from non-syphilitic thrombosis or hemorrhage? I think not. The fact that these remedies are obnoxious to all newly formed tissue elements, may render them useful in the secondary exudation which always surrounds a gross vascular lesion in the nerve centers. Hence, judiciously used they may limit the amount of organizable material and thus lessen the consequent area of irritation or degeneration in adjoining nerve elements.

It sometimes happens that a patient with extensive cerebral softening, under mercurial treatment, develops a marked rise of temperature. This is not necessarily or even probably mercurial fever in most cases. It would appear to the writer to be due to the rapid breaking down of the necrotic area and the cellular exudate, with the absorption of the debris into the general circulation too rapidly to admit of complete oxidation and excretion. Hence, the pyrexia is more or less septic in origin. It is wise in these cases to omit mercury for a few days and then resume it when the fever subsides.

May vascular disease, widely spread, without foci of gummatous growth, exist as a result of syphilis and give rise to marked nervous manifestations?

The probability is that it may. Berkley[6] has reported two such cases; one with autopsy, in which the chief vascular findings were an extensive and widespread infiltration of the media of the arteries with a hyaline-fibrous material which materially narrowed and in some places even occluded the caliber.

This degenerative change was present in the arteries of the gray matter of the cord, more particularly in those of "Clarke's columns," and in the medulla oblongata; it was also present in the spinal root arteries and in the skin tissues. The writer has under observation a case presenting similar clinical features, in which, however, syphilis can not be traced.

The importance of recognition of this condition when possible lies in the fact that no therapeutic measure known to us has any favorable influence on hyaline vascular degeneration. We may do well to remember, however, that combination of degenerative lesions and inflammation are frequent (Berkley[7]) and that remedies may exert a favorable influence on the inflammatory element.

One more reference to therapy in the light of modern pathology. What have we to look forward to as an improvement upon present modes of treatment? The discovery of an antitoxin serum treatment, similar to that of diphtheria, must be conceded as possible. The arrest, and caseation or cicatrization of gummatous exudates in cases untreated by medicines, as in the one before cited, furnishes us a basis for hope in this direction. The difficulty of transmitting syphilis to the lower animals, which has heretofore hindered experimentation in this direction, will not necessarily always remain unsurmountable.

Neviorovsky[8] has reported favorable results in recent syphilis, from injections of human serum taken from subjects of tertiary syphilis.

Again, remarkable results in two cases have attended the use of Hayem's artificial serum (sodium chlorid 7 gm., crystallized disodic phosphate 2 gm., water 1000 gm.). Half of this was injected every five or six days in addition to mercury and iodids, in cases, which had obstinately resisted the latter remedies alone. The lesions yielded rapidly to the combined treatment.[9]

SUMMARY.

The pathological processes concerned in syphilis of the nervous system comprise:

1. A localized parenchymatous and interstitial neuritis at the site of the initial lesion, due to endarteritis, compression and local toxic action.

2. A localized root neuritis (cranial or spinal), and a peripheral mono-neuritis, both of gummatous type, may occur in the "secondary" stage. A generalized or "multiple" neuritis has been reported, but is so rare as to be a pathological curiosity and open to doubt as to origin.

3. A generalized toxemia affecting the nerve centers directly or metabolism in general and producing febrile reaction of a "specific" type, i. e., "secondary" fever.

4. Inflammatory ("gummatous") lesions, due to disseminated or localized vascular infections. The arterial walls are the chief seat of these gummatous exudations, and the exudate may begin as a "periarteritis," a mesarteritis or an endarteritis, eventually in most cases becoming a "panarteritis"—Berkley. The exudate is always intra-mural—not intra-lumenal—the narrowing of the lumen being due to concentric or nodular thickening of the walls, and heaping up (proliferation) of the deep endothelial layers of the intima. Necrotic changes in the inner layer probably precede thrombosis.

The infecting material (bacteria?) probably reaches the vessel wall via the vasavasorum, from which a portion of the exudate at least is derived. Direct infection of the lining endothelium, by the main blood stream, is unknown and probably does not occur, excepting in the terminal capillary plexuses.

The materials constituting the inflammatory exudate in all forms of gummatous syphilis, whether arteritis, meningitis or tumor are biologically identical, the differences which exist anatomically being due to location and distribution of the exudate. The characteristics of gummatous syphilis of the nervous system are: (*a*), the lesions are primarily vascular; (*b*), the lesions are usually multiple; (*c*), the lesions are usually non-systematized in a neurological sense, though they show a predilection for certain localities—namely, the basal meninges, and the arteries of the basal ganglia and motor area; in the cord, the meninges and the ventral horns.

5. Gummatous lesions are, in a measure, self-limited, their growth being checked by: (*a*), central necrosis, due to deficient vascularity; (*b*), the probable development of an antitoxin which checks the local proliferation of microbes; (*c*), fatty degeneration and absorption of the fluid portions with caseation or cicatrization of the remainder.

6. Degenerative nervous processes, due directly to syphilitic exudations, are of two types: (*a*), "compression" degeneration due to prolonged pressure by gummatous masses or their cicatricial sequelæ which separates various neuron processes from the influence of corresponding "trophic centers" (neuron bodies); (*b*) secondary degeneration consequent upon destruction of these same neuron bodies by softening, of thrombotic or hemorrhagic origin. The preceding two types are classed as "non-systematized" degenerations, in contradistinction to:

7. Degenerative diseases, of "systematized" type, such as locomotor ataxia and paresis. These should probably be looked upon as malnutritional affections due in part to arterial degeneration (fibrous or hyaline or both) which may or may not be of syphilitic origin; and in part to inherent individual predisposition to early dissolution of certain physiological systems. These degenerations are not benefited and may be made worse by vigorous anti-syphilitic medication.

8. Remedies of value in syphilis may act in three ways: (*a*), the most usual, by promoting necrosis in the embryonic cells of the exudate, thus permitting their removal in large part by the lymph channels; (*b*), by stimulating the excretory organs generally, thus favoring removal of "toxins" produced by the disease; (*c*), possibly by the promotion of leucocytosis and other tissue changes, which set free an increase of the natural amount of (hypothetical) antitoxin. In no case do these remedies act as "absorbents" or "stimulate the absorbents," nor have we reason to believe that they destroy the microbes of the disease.

9. Any lesion of the nerve centers, attended or followed by inflammatory exudate, whether syphilitic or non-syphilitic, may be favorably influenced by the judicious administration of mercurials and iodids; and subsequent amount of damage by cicatricial compression or irritation be materially lessened.

10. The discovery of a means of producing artificially an antitoxin which shall arrest the disease in an early stage, must be conceded as a possibility.

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DISCUSSION ON SYMPOSIUM ON SYPHILIS OF THE BRAIN.

DR. C. B. BURR, Flint, Mich.—The fact which Dr. Patrick alluded to, in connection with the case mentioned, namely, that the history of infection so many years before caused him to doubt whether syphilis was at the bottom of the symptoms presented, would have led me to the opposite conclusion, inasmuch as in my experience ten or fifteen or more years may elapse after infection before the development of cerebral syphilis. My practice, however, is largely among patients presenting mental disturbance with brain syphilis.

Of cerebral syphilis accompanied by marked disturbances of the mental operations there are two interesting varieties: one in which motor symptoms predominate; the other in which the symptoms are altogether psychical. They are both characterized by reduction. This is their most conspicuous quality. In the one the symptoms are clinically difficult to distinguish from those of paretic dementia. However, there is less apt to be expansive delusions, remissions are more frequent and the disease is of longer duration. In the second variety there is psychical reduction, manifested in dementia, the symptom of lack of memory being the most prominent. There is also hebetude and the patient is dull and unresponsive.

DR. H. D. VALIN, St. Peter, Minn.—I would like to say something about the bacteriology of syphilis. About 1896 an investigator in Baden, Germany, thought he had discovered the bacillus, and he published a pamphlet on the subject. An insane asylum is not a very good place in which to study the bacteriology of syphilis, as in my experience, cases of recent syphilis are rarely encountered there, but I thought I could get some outside cases, and through the courtesy of our late commissioner of lunacy I secured some pus which he assured me came from a syphilitic bubo. This remained for two or three weeks without undergoing any putrefactive changes, which agrees with the statement that has been made that syphilitic pus contains some element which retards putrefaction. Upon examining this pus, I found a small bacillus, staining by Gram's method, which had the characteristics of the bacillus that has been described by Van Niessen. After the pus had been kept for several weeks, increased numbers of this bacillus were found. With this pus I also undertook some inoculation experiments upon animals, and in one of the animals I found three growths in the liver which had the gross appearance of gumma and appeared so upon section.

In another case I was called upon to make a blood analysis by a surgeon not far from St. Peter. This patient had been operated on by another surgeon, who saved the man's life, but the operation left a biliary fistula. In the blood and bile of that patient I found a few small bacilli which were similar to those described by Van Niessen. I found it very difficult to cultivate these bacilli. The work must be done on gelatin. The characteristic changes observed in the gelatin are these: After seven or eight days the upper layer will begin to liquefy, and this will continue until the gelatin is completely liquefied, and at the bottom is a mass of detritus which on staining shows the bacillus. This process of liquefaction also takes place when streptococci are present. Van Niessen states that he found the bacillus even in chronic cases of syphilis of the

florid type. In a case of syphilis which came under my observation an examination failed to show any of these bacilli.

DR. E. G. CARPENTER, Columbus, Ohio—There are two points that I have observed in syphilis of the cord and brain. In the first place, in syphilis of the cord, and particularly in those cases where the disease has involved both the brain and the cord, I have noticed atypical reflexes, that is, they were active on one side and absent on the other, with more or less spasticity accompanied by ankle clonus. Another symptom which I have observed, is a slight loss of memory and some degree of dementia, with an accompanying depression sometimes amounting to melancholia. This, in my experience, is rather a common symptom in these cases, and it is in keeping with what we find in other diseases resulting from infection. For example, I have noticed this same symptom of depression in la grippe and typhoid fever.

DR. JOHN PUNTON, Kansas City—If the postulate laid down by Dr. Patrick in his paper is true, namely, that the symptoms in connection with cerebral syphilis are apt to present themselves within the first year and gradually decrease in frequency and severity as time goes on, then we must revolutionize our teachings in regard to the symptomatology of cerebral syphilis. From what the Doctor says, however, it would seem that he bases his claims on clinical knowledge. There are one or two points in connection with this subject that have not received sufficient emphasis. One is the temporary remission of symptoms that is not infrequently observed in cerebral syphilis. The patient may apparently be seriously ill on one day, and markedly improved the next.

DR. EDWARD E. MAYER, Pittsburg—The postulates set forth by Dr. Patrick may perhaps be a trifle too emphatic, and yet they certainly have a good deal of truth in them. Certainly, his statement regarding the onset of cerebral syphilis and the presence of the initial symptoms agrees with what I tried to say yesterday in the discussion of Dr. Norbury's paper upon paretic dementia. Because syphilis has occurred ten or twenty years before, we should not ascribe to it the cause of the dementia, and the same is true here. In the symposium on syphilis of the brain to which we have listened, the essayists very rightly separated the somatic from the psychical conditions. One symptom to which I desire to call attention is the partial psychic defect. Dr. Patrick ably presented the characteristic features—the bizarre coming and going of symptoms, the progressive dementia; the coma, and the remissions and exacerbations which are so characteristic of brain syphilis.

DR. SYDNEY KUH, Chicago—If there is one thing that is peculiar to the syphilitic psychoses, it is the intermittent and irregular character of the symptoms. One of these intermittent symptoms is perhaps especially characteristic, although it was described nearly fifty years ago; it is almost forgotten to-day. I refer to the symptom which went under the name of the intermittent aphasia of Mauriac. As far as I know, the character of this intermittent aphasia is almost invariably motor. The first attack, which is incomplete and temporary, is followed by a second and more severe attack and the condition finally becomes permanent. Often it is the only symptom. I do not think such a recurrent motor aphasia occurs in any disease excepting in syphilis of nervous system and paralytic dementia.

Perhaps the importance of nocturnal headaches as a symptom of cerebral syphilis is somewhat overestimated. My experience in the last few years has brought under my observation several cases with distinct and severe nocturnal headaches which I had good reason to believe were not of syphilitic origin. In one, the postmortem showed an immense abscess of the lobes of the brain. Very little has been said about the treatment of syphilis, and perhaps it might not be amiss to call attention to one method which in very severe cases has given me most satisfactory results. I refer to the intra-venous injection of corrosive sublimate, as recommended by an Italian writer. The method seems more dangerous than it really is. A local thrombosis may follow the injection, and occasionally there is ulceration; this has occurred in two out of the twelve cases where I have resorted to this method.

DR. FRANK P. NORBURY, Jacksonville, Ill.—Dr. Langdon, in his paper, spoke of the fever in syphilis. Some few years ago I observed a case of cerebral syphilis, or rather a case of acute insanity, the victim of syphilis in its secondary stage. During the first six weeks of the patient's stay in the hospital, I noticed a daily elevation of temperature. Whether this was due primarily to the syphilis or not I do not know, but I am inclined to believe that it was, and that the action of syphilitic poison in this case was the direct cause of the acute insanity. Melancholia was the form of mental disease, and I took it that the toxemia was so profound as to disturb nutrition, just as is noticed in typhoid fever, rheumatism and other infectious fevers. He recovered from his insanity and went to Iowa, where he subsequently resided. One day, eighteen months after leaving the hospital, he fell while walking along the street, and was picked up unconscious. He died in the course of a few days, and his death was attributed to some acute brain trouble.

DR. DEWEY, in reply—I do not know that I have anything more to say, unless it may be to give the periods of time that elapsed in my cases between the syphilitic infection and the onset of the insanity. In one case the insanity followed the infection within two years; in two, within three years; in three, within six years; in four, within seven years; in three, within eight years; in two, within nine years; in one, within ten years; in one, within twelve years; in four, within fifteen years, and in one, within sixteen years. In one, where nineteen years had elapsed since the syphilitic infection, the possibility of a second infection was thought of. This was the case of a religious brother who had been engaged in his priestly work for twenty years. He frankly acknowledged that he had been infected previous to that time, but the circumstances were such that a second infection could scarcely have occurred.

The symptom of loss of memory, to which one of the speakers referred, can not always be regarded as diagnostic of cerebral syphilis. It may be due to other causes. With reference to the intra-muscular use of bichlorid solution, I had a patient upon whom this method of treatment was employed. He thought the hypodermic injection was given to him for sedative purposes, and regularly fell asleep soon after administration.

DR. LANGDON, in reply—The suggestions made by Dr. Kuh were referred to in that portion of my paper which I did not get an opportunity to read. I mentioned the fact there that in the treatment of syphilis several improvements upon our present methods have been suggested by various writers. Among these is a Russian who in two or three very obstinate cases has employed an antitoxin with very favorable results. The antitoxin is obtained from the serum of old syphilitic patients, and is given by hypodermic injection.

PREVENTABLE DISEASE IN THE ARMY OF THE UNITED STATES—CAUSE, EFFECT AND REMEDY.*

MAJOR W. O. OWEN, M.D.
FORT THOMAS, KY.

Owing to the fact that my ideas, as expressed in a pamphlet that I had printed for private circulation, have appeared in part in the public press; and fearing that some one may be misled as to my intention and thought, I have concluded that it were better to express myself as fully as I can to the Academy of Medicine of Cincinnati and through it to the profession at large. I had no thought of making an attack upon any individual and therefore carefully abstained from using the name of any officer where possible offense might be taken. My aim was to call the attention of my professional brothers to a state of affairs which appeared to me was costing the Government large sums of money and the soldier great and unnecessary suffering from preventable disease, to call attention to the fact that the Red Cross of the Geneva Convention, which was intended to protect the surgeon, was actually a menace to his personal safety, for he was unwittingly using it

* Read before the Cincinnati Academy of Medicine, Oct. 7. For discussion, see p. 1130.

to protect property which belonged to the fighting force and was only loaned to the hospitals for temporary use. To ask you if you felt that you could agree with the position which I have taken that you put your shoulder to the wheel and help me to see if we could not as a body be able to create a public sentiment which in the future would lead to the correction of this, which I believe to be a wrong inflicted on the soldiers of all armies. I have seen in print that many medical men were sacrificed to save the military officer in the Crimea from the public clamor. Has not similar matter happened in the United States?

There occurred from May, 1898, to June, 1899, in the armies of the United States, deaths from: diarrhea and dysentery, 342; typhoid fever, 2774; homicide, suicide, and gunshot wounds, 1020. Out of a total death of 6619: diarrhea, dysentery, and typhoid fever, 3116; homicide, suicide, and gunshot wounds, 1020. This is slightly more than three deaths from these well-known preventable diseases to one of homicide, suicide, and gunshot wounds. (See Table VII, page 349, Report of the Surgeon-General United States Army to the Secretary of War, 1899). It will be noticed that this includes the battle casualties of Cuba, Porto Rico and the Philippines to June, 1899. Was this loss an imperative military necessity?

I believe that the day has come when all sanitary matters of the army should be placed under the control of the Army Medical Department for the reasons:

1. That by so doing very large economies may be made in the maintenance of the army, both in money to the United States and in suffering to the individual soldier.

2. To enable the Army Medical Department to obtain the immunity guaranteed by international treaty, which at present is not fully done.

Under the first head I would call attention to the fact that nowhere in statute law are the duties of the army medical man laid down except in one place, which says that he shall attend to the families of officers and men free; and in one other, that the Secretary of War may assign him to such duties as he may deem for the best interests of the service: *"Provided,* that the medical officers of the army and contract surgeons shall, whenever practicable, attend the families of officers and soldiers free of charge." (Supplement Revised Statutes United States, Chapter 217, Paragraph 6, Vol. I, p. 457.) "That medical officers of the army may be assigned by the Secretary of War to such duties as the interests of the service may demand." (Supplement Revised Statutes United States, Vol. II, Chapter 270, Section 3, p. 53.) The opinion expressed by a medical officer that a man has defects that disqualify him for service as a soldier is not final; it is a common thing for these men to be accepted by special authority, the defects being noted on the enlistment papers.

There is no regulation, so far as I know, and I think that I know, which requires an officer in charge of construction to submit the plans of construction to the Medical Department for an expression of an opinion as to the sanitary results before beginning the construction. The result is that every post at which I have served, even the most modern, is full of sanitary error that has cost much money to correct, when it has been corrected. Much disease has been the result.

In the annual reports of the Surgeon-General will be found each year accounts of many faults of sanitation which have been reported in the preceding twelve months. Each of these faults could have been prevented by proper medical advice at the time when the original construction was being made. When examining these reports it should be borne in mind that attention is only called to the more glaring instances which have been brought before the office and that the mass is too great to be placed in an annual report.

All that the Medical Department can do is for its individual members to report errors and recommend their correction. It is only a courtesy when the commanding officer listens to his medical officer. He is compelled by regulation to listen, but he is given the expressed right not to carry out the recommendation made by his medical officer for the prevention of disease amongst his men. In other words, he is given, by regulation, control over matter of which he has no adequate knowledge, as witness the following:

1392. The Medical Department, under the direction of the Secretary of War, is charged with the duty of investigating the sanitary condition of the army and making recommendations in reference thereto, with the duty of caring for the sick and wounded, making physical examination of officers and enlisted men, and furnishing all medical and hospital supplies, except for public animals.

1393. The surgeon, under the direction of the commanding officer, will supervise the hygiene of the post or command, and recommend such measures as he may deem necessary to prevent or diminish disease. He will examine, at least once a month, and note in the medical history of the post the sanitary condition of all public buildings, the drainage, the sewerage, amount and quality of the water supply, the clothing and habits of the men, and character and cooking of the food, and immediately after such examination will report thereon in writing to the commanding officer, with such recommendations as he may deem proper. The commanding officer will return the report, with his views and action indorsed thereon, and if he deem the action recommended impracticable or undesirable, will state fully his objections. The indorsement will be recorded in the medical history of the post, and the report and indorsement will be forwarded by the surgeon, through military channels, to the Surgeon-General. (Army Regulations, 1895, 1392-93.)

Constant changes are being made in posts by the quartermaster affecting sanitation. The surgeon, supposedly in charge of sanitation, finds or may not find them out before some one is dangerously ill or dead. If not before the disease has arisen, a search is then made, and reveals new and dangerous changes made in work previously inspected and found to be in good shape. Should he ask about it, he will be informed that these changes were made by the quartermaster whose business it is to look after construction.

At Fort ———— each company has ten wash basins, arranged in two gangs of five each, one gang on each side of the common trap and vent. This is a violation of the rules for plumbing issued from the Quartermaster's Department in Washington, D. C. It is also a violation of the plumbing rules of all of the large cities.

In time of war military necessity must control, but every precaution both in peace and war, but particularly in war, should be taken to put the soldier upon the highest plane of physical and mental excellence, so that he may be able to reach the highest efficiency as a fighting machine. Yet I have seen men drilled morning after morning in dew-laden grass until they were wet to the knee; have seen them living in overcrowded barracks, making a large sick report without actual necessity, etc., and the medical officer powerless to do aught but recommend.

Take the report of Lieut.-Col. A. S. Kimball, Quartermaster's Department, on the water supply of the Presidio, Cal. (See Report Surgeon-General United States Army to the Secretary of War, 1896, pp. 137-38). His report shows a water of undoubted high quality. He has based his report on the analysis made by Thomas Price & Son.

It is evident that these chemists were not informed as to the character of the water-shed from which this water is obtained. Mountain Lake, from borings around which this water is obtained, has a water-shed of two and one-half to three square miles; it is composed of seashore sand resting on a bed of rock. In this water-shed are three of the largest cemeteries of the city of San Francisco. A very large part of this water-shed is a closely-built city, with sewered streets, which sewers have uncemented brick bottoms. There are many animals stabled in it; all of the fecal matters of these animals and of this population is stored in this water-shed; all of the products of the decomposition of the bodies buried in these three graveyards drain into it; all of the excrement and kitchen waste of old Camp Merritt were buried in it. (There were some 18,000 men camped in this camp.) So long as the sand retains its ability to filter properly the water will be safe; when it becomes saturated with filth the health of the soldier at the Presidio will suffer. The water level of this lake has been lowered some twenty feet since the pumps have been at work. The officers of the Marine-Hospital Service tell me that they are afraid to use this lake water without first subjecting it to sixty pounds of steam. I made a careful chemical analysis of this water in 1899, and a careful personal inspection of this water-shed; it was self-evident that there must be contamination from animal source.

I believe that the analysis of Price & Son was correct when made; that the differences that exist between us are due to changes which have taken place from the increased number of bodies in the water-shed, from the increase in the population within the water-shed; that with these two causes that the sand is more soiled, and therefore no longer filters so well as formerly. It is a well-known fact that when sand is well aërated and not overloaded that it will filter out from 98 to 99.5 per cent. of all the germinal matter present.

Point Lobos Creek is the natural drainage channel of this water-shed. I was informed in the office of the Spring Valley Water Company that it had been formerly in use as a water supply for the city of San Francisco but that it had been abandoned for such use as it was too polluted.

The Presidio, with a water supply from this water-shed, was especially chosen as a model camp in which to assemble the troops for Philippine service, and the muster out of the returning volunteers.

Gen. ————, in his testimony before the war investigating commission, says in effect that he did not listen to his chief surgeon as to the medical needs of those commands that were to be detached from him; that he took from others and gave to his personal corps medical material on requisition that his chief surgeon had disapproved; that he compelled his chief surgeon to personally look after a division hospital instead of allowing him to look after the larger duties of his position; that he himself, in his own person, set the example of defying the recommendation of his Medical Department in drinking from a well that he was informed that the Medical Department had said was unsafe to use, and that he permitted the broken pump to be repaired so that the well might still be used. (See pp. 3080-81-85-86, Commission's Report, War with Spain.)

The general in a letter dated Nov. 12, 1898, uses the following language concerning his chief surgeon: "In the matter of the location of the troops in the camp, Col. ———— was not consulted, so far as my recollection goes, nor did I deem it necessary to consult him; there was no need of it. Any 'protest' he made received such attention as the importance of it required."

The report of Reed, Vaughn, and Shakespeare says:

> Some regiments at ————, as we have shown, were so located that they received the drainage of other regimental camps. There was certainly no sufficient excuse for this. . . . The —th Indiana was forced to contract its lines to half the regulation distance, and it was then only 30 feet distant from the —th Ohio. The sinks of the last-mentioned regiment and the kitchens of the —st West Virginia were only 12 or 15 feet apart." . . . (The —th Penn.). This command reached —— May 20, and was unfortunately located on low ground. Requests for a change of location were repeatedly made in June and July. The soil became muddy; the camp received the washings from the other camps above; the sinks rapidly filled with water and overflowed, and still requests for a change in location were unheeded until August 12.
>
> As we have already seen, some regiments were improperly located from a sanitary standpoint. This was done by superior line officers, and sometimes in the face of protests from the medical officers. We have also seen that requests for a change in location were disregarded and regiments were allowed to occupy one site for too long a time. In general the camps became very filthy. It must be therefore admitted, it appears to us, that line officers were to some extent responsible for the conditions of the camps under their command. The medical officer can only recommend; the line officer can command.

Again the letter of the general continues: "Col. ————'s impression of the water was not borne out by the analysis of it." Of this command 21.56 per cent. suffered with typhoid fever, and 714 men died of this disease in this camp.

What opportunity have sanitary officers to have their recommendations carried out; what opportunity to prevent disease, when the general in command treats his chief surgeon with disrespect both as to his person and as to his recommendation; when the general himself drinks a water that he is informed has been condemned by the sanitary officer? In another place, when the general has read to him a report made by a sanitary officer concerning this camp, he requested that he might be given a copy of the report, so that he might bring the reporter to trial before a general court martial. He was informed that it was not protected testimony, and where a copy could be had. His further action is not known.

The mortality of the Spanish-American war was 28 per 1000 living. The mortality of men in civil life, including the lame, halt, and the blind, is about 8 per 1000 living between 20 and 35, the age limit of the armies of the United States. The enlisted soldier of the army of the United States is selected carefully from the flower of young American manhood. Young men physically sound between 20 and 35, with proper sanitary care, should not have a mortality of more than 1 or 2 per 1000 per annum; excess over this means careless sanitary work, and 28 per 1000, which was the average of the Spanish-American war, means that the work was badly done in these camps, and that more than four-fifths of these diseases and deaths should have been prevented; they were not a military necessity, for no enemy was near. These lives should not have been

taken; their mothers, wives and sisters should not have been thus grieved; the Government should have been spared this loss of life, and the loss of money needed to replace the dead and disabled, to pension the widows and dependents of the dead and to pension the disabled.

So far there has been allowed 6000 pension claims for the Spanish-American war; 44,000 claims are still to be adjusted. One to seven so far has been the average allowed; if these receive $100 per annum (the average for June, 1900, was $169.10) and the ratio holds, it means that the annual pensions for this war at present amount to $1,200,000, or the interest at 3 per cent. on $40,000,000.

Fully two-thirds of this list should have been saved by avoiding pensions to men disabled by preventable disease. These men are now disabled or dead; they, their widows and dependents, are to be cared for by the Government. How much better to have so cared for them that they had been returned to the bread-winners of the country! The normal death-rate of times of peace is largely increased in war times, not from injury, as many suppose, but from disease. These diseases are not so much from marching and maneuvering for battle position, but to the insanitary conditions of the camps, which, under a proper responsibility before the law of the land, can be easily corrected.

Look at the testimony given before the commission to investigate the Spanish-American war concerning Camp Alger, Fall's Church, Va.; concerning Camp Thomas, Chickamauga, Ga., with their pollutions of every possible class. The loss of life in these camps was more than forty times the corresponding loss in the city of Cincinnati, and one hundred times that of the City of New York (see "Purification of Public Water Supplies," J. W. Hill, p. 268).

The law should be so drawn that, without depriving the line officers of their proper military authority, yet it should fix definitely on whom this responsibility for the death and disability of the soldier by preventable disease rested; should fix when and under what conditions the Medical Department or the Line is responsible, or to fix it permanently on the one or the other. The law should fix the responsibility in order that some one man may be punished for the violation of established sanitary law.

No man, seeing before him the absolute certainty of having to account to the law, with his own body and reputation, for the loss of life, and for disease arising from his carelessness, lack of knowledge, lack of what not, will hesitate to apply the legal remedy and thus keep from his own shoulders the responsibility.

The saving to an army in suffering, to its individual men, to the Government in money paid in pensions, to the dependents of the dead, the disabled, and to men to replace the dead and disabled on the active lists is simply incalculable.

The cost to the individual soldier in suffering has been great from a lack of proper sanitary care. A careful examination of the medical histories of wars will show any man, who has made sanitation a study, what huge costs governments pay for a lack of sanitary law for their armies, and a fixing therein of the individual upon whom shall rest the responsibility for a breach of the sanitary law. Any military commander committing a military blunder which sacrifices his army is punished, but they are allowed to sacrifice men without number to insanitary conditions without question, without a word of condemnation, or even a thought of so doing.

TRANSPORTATION.

The other point to which I wish to call attention is the International Treaty, the so-called Geneva Convention, to which the United States is a party. This provides that all of the transportation and supplies of the Medical Department which go with the moving army, under its terms called "ambulances" (See Additional Articles, Article III, Geneva Convention), are exempt from capture and from being fired upon.

The greater part of these are under the control of the Line, and belong to the Quartermaster's Department, and are accounted for to this department. This condition makes all of this transportation liable to capture, and to be fired upon by the enemy, for they are unable to distinguish the transportation of the Medical Department (exempt) from that of the Quartermaster (non-exempt). This leaves medical transportation exposed to capture, etc., because unprotected by the International Treaty. (The Act of March 11, 1864, gives strict orders about ambulances, etc. The United States became a party to the Geneva Convention in 1882.)

The transportation of the Medical Department and many medical supplies were left at Tampa, Fla., by orders of the line officer when the army went to Cuba in 1898. The Surgeon-General should have had authority, and then he would have had the proper ship on hand, and would have moved all of his supplies and transportation on his own ship at the same time that the troops moved, and he would have had his material and transportation ready to disembark at the same time that the troops disembarked, and would have prevented the suffering that took place for the lack of this material and transportation when the fights took place. As it was, the comparatively small amount of material which the chief surgeon was able to take with the expedition was scattered throughout all of the ships of the expedition; he was compelled to devote much of his own time and that of other officers to try to get such portions of this medical property as was possible from the mixed mass of quartermaster, ordinance, commissary, and medical stores on board of these ships, instead of being able to attend to the proper distribution of both officers and supplies of his department.

The report of Captain E. L. Munson, Assistant-Surgeon, U. S. A., shows the exceeding difficulty which the medical department encountered in getting proper transportation for their supplies, showing that after much worry he obtained a four-oared boat, which was taken away from him after a few hours.

Should a field hospital be captured under present conditions, the first question by the enemy would be: "To what department does this material belong? Can the Line of your army take any of this material from the Medical Department and convert it to its own use, or is it exclusively for the use of the Medical Department?" The answer by our medical officer of necessity must be that "the axes, stoves, cooking utensils, hospital tents and all other tents, hospital flags and guidons, horse equipments, wagons, ambulances, mules, and horses, one and all belong to the Quartermaster's Department; that they were liable at any time to be taken by the Line, used by them for fighting purposes, and that the Line was the sole judge of when and for what reason this was to be done."

The enemy will very properly say that "you are sailing under false colors. We have no time for fine distinctions. We will take the whole outfit." Yet the

medical officer is ordered to go into the field with this transportation, which belongs to the fighting force and to protect it by flying the Red Cross flag of the Geneva Convention over it until such time as the fighting force may need it. It is a clear violation of this treaty to place in the field hospital (ambulance) material belonging to the fighting force. Yet in the armies of the United States the "ambulances" are composed of material which the Line is obligated to take from the use of the sick and wounded whenever its needs require that they should do so, for not even the hospital flag or hospital tent is the property of the Medical Department. In fact all the wagons, horses, tents, etc., which go to form an "ambulance" belongs to the fighting force, and it is only loaned to the Medical Department until such time as the fighting force needs it again.

The word "ambulance" is ordinarily used to express the idea of a wagon so prepared that it will carry a sick or wounded man comfortably. This word, however, when used in the Geneva Convention is given a distinct and very much enlarged meaning. For the 3d Article of the additional articles gives to it the meaning of a field hospital or other temporary establishment which follows the troops on the field of battle to receive the sick and wounded. Hence, our English cousins and many others say "ambulance wagon," which translates into the vernacular as "hospital wagon."

It was the evident intention of the Geneva Convention to protect the sick and wounded. The ambulance wagon, the so-called Red Cross wagon or ambulance, because it is marked with the red cross of this convention, should certainly not be the only part of the field hospital which is protected from being fired on and from capture. The four and six horse wagons, the tentage, beds, bedding, and food are just as necessary to the care of the field hospital, and is, in fact, a part of it. The ambulance brings the patient to the hospital, the wagons move the tentage, etc., from place to place; as the command moves the ambulance wagon moves the patient, the wagons move the hospital. So long as the transportation of the Medical Department belongs to the Quartermaster and is only loaned for temporary use to the Medical Department, will the Line have the right—in fact, the obligation—to take it from the use of the disabled and convert it to the use of the fighting force, when they deem it necessary. What line officer will hesitate for a moment to take the mules from the Red Cross ambulance itself and send them for ammunition, should he be hard pressed and others not available. They do not bear the Red Cross. Certainly they will not hesitate to use a wagon marked Q. M. D., U. S. Army. This will enable the enemy to comply with the Geneva Convention and strip the hospital of everything that is likely to afterward be of use to the fighting force. The Line can at its own volition take quartermaster's property away from the Medical Department.

GENEVA CONVENTION—ORIGINAL ARTICLES.

ARTICLE I.—Ambulances and military hospitals shall be acknowledged to be neuter, and as such shall be protected and respected by belligerents so long as any sick or wounded may be therein. Such neutrality shall cease if the ambulances or hospitals should be held by a military force.

ARTICLE IV.—As the equipment of military hospitals remains subject to the laws of war, persons attached to such hospitals cannot, in withdrawing, carry away any articles but such as are their private property. Under the same circumstances an ambulance shall, on the contrary, retain its equipment.

ADDITIONAL ARTICLES.

ARTICLE III.—Under the conditions provided for in Articles I and IV of the convention, the name "ambulance" applies to field hospitals and other temporary establishments, which follow the troops on the field of battle to receive the sick and wounded.

What are the laws of war concerning the misuse of this protection?

RESPONSIBILITY.

The appended bill does not take command from the Line, but it does compel them to assume the responsibility for insanitary conditions which may arise when they choose to ignore the sanitary recommendations made to them by the Medical Department, when they do so without proper military reason for their action, and it does provide a legal remedy whereby the officer responsible may be reached by proper legal process. To assume the responsibility with proper military reason is a thing that the Line should at all times have the right to assume. In such camps as Camp Thomas, Ga., there were strong reasons to carry out sanitary law and none to ignore them.

On page 2981-83 of the report of the commission to investigate the war with Spain, Col. Hartsuff (the chief surgeon at Camp Thomas, Ga.), testified that he personally reported to the General in command that one of the camps was "outrageously foul; that it was an imperative necessity that this camp be broken up at once; that there are large numbers of typhoid fever cases in each regiment." His letter was dated July 11, 1898. On page 2983 he testifies:

Question: "Practically, then, all the recommendations that you made were simply paper manifestoes?"

Answer: "In most cases; yes, sir."

On page 3080 the General in command testifies:

Question: "Had any of the wells, General, been condemned by the Medical Department prior to your leaving the department?"

Answer: "By alleged Medical Departments? Two of them were erroneous, I believe, after examination into it myself. . . . Another well lying on the road between the Alexander House and Jay's Mill was also condemned. I drank of that well water every time I passed it until somebody broke the pump to pieces. I suppose it was some of our energetic medical fraternity, who had spent their time in finding that there was a suspicion of these two wells, and then I did not bother further about it."

Either the medical officer or the officer in command was at fault. Unfortunately, there is no fixed responsibility before the law for either the one or the other, and so it is that no one is punished for this most culpable state of affairs, except the helpless soldier, whose love of country leads him to an inglorious death and a premature grave by diarrhea or dysentery, a death as useless as it is preventable and expensive to the United States.

The question, plainly put, is, How many men lost their lives in 1898-99 from the incompetency of the commanding officer, or of the medical officer? Of the officer who was to judge of the necessity of carrying out the recommendation made or of the officer whose duty it was to recommend? It must perforce lie between the two.

Army Regulations, 1895, paragraphs 1392-93, make the medical officer responsible for recommendations, but gives none to the commanding officer for not carrying out the recommendations made, but gives him the expressed right not to do so.

No medical man will continue to recommend when he sees his recommendation treated with good-natured indifference, or worse, for by so doing he lessens the influence that he may have; he does, however, continue to talk to the commanding officer and try to influence him in the right direction in spite of the indifference with which he is met. The medical officer is compelled to obtain what he can in a sanitary way by means of placation and persuasion.

In answer to the above there will be many responses, which, when sifted, simply mean that those in command are unwilling to assume responsibilities for matters which they do not understand; that they feel that they must have absolute and entire control of everything in the army, both in peace and war; otherwise the victory is not to be won, etc.; that no man should be allowed to tell them how to take care of the men; that they have done so in the past and that they can do so in the future.

If the medical man in the army is not competent for the responsibilities above sought, the sooner that he is removed and replaced by competent men from civil life the better for all concerned. It is far more important that the medical man should have ability to prevent the ingress of disease into a command than to be able to treat it after it has arisen.

Command has grave responsibilities. In order that it may be effective it must have absolute and unquestioned control of men and material present. Among these responsibilities is that for insanitary conditions that may arise. Line officers are not trained sanitarians, medical officers are. Under the present law neither is responsible. All errors are charged to military necessity, unfortunate, but non-preventable.

The Omniscient has established a law governing the life of the typhoid bacillus as certainly as he has fixed the path for the several planets. The law of germ disease and the law of sanitation, while certain, are delicate and difficult of comprehension and require years of study to comprehend even in degree.

The layman of the highest intelligence does not comprehend the full relation of cause and effect in matters of sanitation, or in the transplantation, growth and destructive effect of the typhoid bacillus without long study. He prefers to call to his own family an expert physician when his wife or child is sick, and he takes expert advice; but when he is an officer of the Line he sometimes—nay, often—regards such advice as an invasion of his superior authority, and disposes of it by writing across the written advice of the expert employed by the Government, the report and recommendation of the medical officer, "Not concurred in," which disposes of the matter.

It is a breach of military discipline to undertake to argue with the commanding officer or to instruct him in sanitary care, or even as to the habits of the typhoid bacillus. Thus soldiers die, are disabled, and huge sums are paid for pensions which could have been avoided. Is it not best to leave sanitary matters in the hands of medical men? Is it wise to leave them in the hands of the Line officer? I have conceived the idea that the purpose of Congress in creating the Medical Department of the United States army was that the Medical Department should direct such measures as would give the General, when he offered or was to receive battle, the greatest number of men in the best physical condition, and to watch over the men that the smallest amount of disease may arise, so that the greatest number may be returned to their homes fit to earn the living for the family when the war is finished, and that the fewest be compelled to accept the provisions of the pension law.

In other words, if the medical officer is to take care solely of the sick and wounded, and the Line officer is to look after the sanitary condition of the camps, barracks and troops, then the most valuable part of the medical officer's knowledge is lost. Certainly his best work is done in preventing disease, and not in caring for it after it has arisen from insanitary conditions imposed by the imperfect knowledge of the Line. To put it another way, there are many medical officers who wish far more strongly for the power to enable them to control disease than for any increased rank that may be given them. Certain it is that the people should dread a war far more for the preventable diseases that may arise than for injuries that may result, and perhaps more still for the taxes for pensions due to such cause.

Compare anywhere the sanitary conditions which exist where the Medical Department controls and where it recommends. Compare the hospitals in the city of Manila with the barracks of the troops of that city. Compare the hospitals where the Medical Department has the command and where it is subjected to the command of a Line officer.

The most important thing to be brought out is, that neither the commanding officer nor the medical officer is responsible under the present law and regulation for insanitary conditions which may arise with the resultant diseases and deaths, that this condition is a great wrong to the soldier and that it should be corrected by law. Neither the commanding officer nor the medical officer can be punished under the present law and regulations. It is my firm conviction that when a man causes the loss of another man's life, by inattention to his duty, or by faulty judgment of what his duty was, that there should be some legal process by which to punish him for his inattention, or to remove him for his lack of correct judgment. Under the present law and regulation the cry is the same old cry which sacrificed the medical man in the Crimean war. The general saying that the medical officer did not inform him of the conditions, that he did not make the proper recommendations, that he himself had made careful daily inspections, that he did not see the conditions complained of; therefore, he could not issue the orders to prevent things that he did not know of. The medical officer answers that he did report day by day to the general, that he made the recommendations, that he foretold that which happened, that the general thought that it was best to let matters take their course. Both claim that the other is responsible and the public can not know which truly is. This very plea was made before the war investigating commission in 1898, when the question was up as to who was responsible for the great spread of typhoid fever and the unnecessary loss of life therefrom. There should be a code of punishment provided for those actions which lead to the death of men from preventable disease without military necessity.

RESULTS.

The results of such regulation were plainly visible at Camp Thomas, Ga., at Camp Alger, Va., and other camps of assembly in 1898-99. Numbers of men lost their lives through some one's fault. Has the responsibility been fixed? No! It is impossible to fix the

responsibility under the present law and regulation. Such things should not be allowed in this day. The responsibility should be fixed on the medical officer, who is trained for this work, or it should be fixed on the Line, and it should be fixed by law. The principal thing is to fix the responsibility either on the Line or the Medical Department, but fix it so that it may not be evaded by any possible excuse, except that of military necessity in the face of the enemy.

The place *par excellence* to see the effect of this lack of law will be a classified list of the diseases and injuries for which pension has been granted, both for the Civil war and that of 1898-99, and a classified list of the claims yet to be adjusted. Take these lists to any man who is a sanitarian and ask him what percentage of the disease represented on the lists could have been prevented by a proper sanitary care, what percentage with good sanitary care would have left no permanent disability.

There is no man more earnestly in favor of the pension law than I am, but I do feel that it is far better to so treat the soldier that when the war is over he will return home in good physical and mental condition. To so return all but the killed and wounded would be perfection.

I do not wish to imply that the pension rolls have men improperly on them, but I do wish most emphatically to state that had the Medical Department had the power to control in sanitary matters a very large proportion of the deaths and disabilities from disease could have been prevented, and would have been.

The Line officer should have the power of command over his troops, but when he refuses to correct sanitary errors he should have a controlling and imperative strategical reason for his refusal. He should not be allowed to subject his command to insanitary conditions in time of peace, nor in time of war, knowingly, unless there be imperative strategic reason, which he could offer to his superior as a proper defense.

No good business man employs non-experts to supervise experts.

It is my belief that the army medical corps, as a body, cares more for the power to do its full duty to the army than it does for any increased rank or pay. In order to do its full duty to the army it must control in sanitary matters.

At present its sole function is advice and recommendation; its only power the mental strength of its individual officer, who sees the sanitary error, and his ability to persuade commanding officer to correct it.

The following table is taken from an abstract of the report of Reed, Vaughn and Shakespeare, on the origin and spread of typhoid fever in the military camps of the United States in the Spanish war in 1898, p. 193:

Command, Etc.	Number of Regiments.	Mean Strength.	Cases of Typhoid Fever.		Deaths from Typhoid.	Deaths from all Diseases
			Certain.	Certain and probable.		
1st Army Corps (Chickamauga)	22	27,380	2,912	5,921	344	397
3d Army Corps (Chickamauga)	17	20,568	1,741	4,418	417	469
4th Army Corps (Chickamauga)	7	7,507	440	1,498	99	112
2d Army Corps (Alger)	18	19,807	1,807	2,226	212	259
2d Army Corps (Meade)	12	13,962	1,799	2,690	150	168
7th Army Corps, 2d Division (Jacksonville)	9	10,759	1,729	2,693	248	281
Total	85	99,983	10,428	19,446	1,460	1,686
7th Army Corps, 3d Division	7	7,990	....	1,292	120	146
Grand total	92	107,973	....	20,738	1,580	1,832

Command, Etc.	Number of Regiments.	Percent. of deaths from Typhoid to all other deaths.	Morbidity of Typhoid Fever in 1,000 Mean Strength		Deaths from Typhoid in 1,000 Mean Strength.
			Certain	Certain and prob.	
1st Army Corps (Chickamauga)	22	84.13	106.35	216.25	12.19
3d Army Corps (Chickamauga)	17	88.91	84.64	214.79	20.27
4th Army Corps (Chickamauga)	7	88.39	58.61	199.54	13.15
2d Army Corps (Alger)	18	81.87	91.23	112.38	10.74
2d Army Corps (Meade)	12	89.28	128.84	192.67	10.74
7th Army Corps, 2d Division (Jacksonville	9	88.25	160.70	250.30	23.05
Total	85	86.59	104.29	194.49	14.60
7th Army Corps, 3d Division	7	82.19	....	161.70	15.01
Grand total	92	86.24	....	192.65	14.63

Command, Etc.	Total Deaths	Typhoid Deaths	Per cent. of Typhoid Deaths to all Other Deaths.
1st Division, 1st Army Corps (p. 13)	283	190	67.49
2d Division, 1st Army Corps (p. 14)	135	109	80.70
3d Division, 1st Army Corps (p. 18)	210	180	85.71
Total (p. 21)	628	479	76.27
1st Division, 3d Army Corps (p. 26)	215	174	80.93
2d Division, 3d Army Corps (p. 30)	281	257	91.45
Grand total	1124	910	....

Mean strength 1st Army Corps (p. 22)	27,380
Number of certain and probable typhoid fever cases (p. 22)	5,921
Number of certain typhoid fever cases	2,912
Percentage of death from typhoid fever, 1st Army Corps	1.749
Percentage of death from typhoid fever, 3d Army Corps	2.146
Aggregate strength of the 17 regiments, 3d Army Corps (p. 33)	20,568
Total number of cases of probable typhoid in the 17 regiments of this corps (p. 33)	4,418
Percentage of cases of probable typhoid in the 17 regiments of this corps (p. 33)	21.47
Total number of deaths from typhoid fever in the 17 regiments of this corps (p. 33)	417
Aggregate strength of the 1st and 3d Army Corps, excluding the regiments that went to Porto Rico from the 1st Division, 1st Army Corps, the 1st South Carolina, from the 3d Division of the 1st Army Corps and the 1st District of Columbia Volunteers from 1st Division, 3d Army Corps (p. 57)	44,803
Total number of probable cases of typhoid fever among these troops (p. 57)	9,660
Percentage of probable typhoid fever among these troops (p. 57)	21.56
Total number of deaths from typhoid fever among these troops (p. 57)	714

Mortality per 100,000 living from typhoid fever was as follows: First Army Corps, 1749; Third Army Corps, 2146.

J. W. Hill, "Purification Public Water Supplies," pp. 268-71, gives the following death-rate for typhoid fever: New York, 21; Chicago, 83; Philadelphia, 64; Cincinnati, 67; The Hague, Holland, 3; Cairo, Egypt, 260.

The above is calculated on all living in the cities; those for the army corps are for men in the prime of life, from 21 to 35, selected after a careful physical examination (see enlistment papers in the Adjutant-General's office, Washington, D. C.).

Notter and Firth, "Theory and Practice of Hygiene," published by Blakiston & Son, 1896, p. 772, gives the annual death-rate per 1000 living males for age groups:

Age group.	1871-80	1881-90	1891-93
20-25	7.4	5.7	5.4
25-35	9.4	7.8	7.4

Translating this to 100,000 living makes:

20-25	740	570	540
25-35	940	780	740

Death-rate per 100,000 living from typhoid fever alone in the army, the physical condition of the men vouched for at enlistment as sound, was as follows: First Army Corps, 1749; Third Army Corps, 2146.

On page 779 of Notter and Firth is given the follow-

ing as the death-rate from typhoid fever per 1000 living in England and Wales:

1884	0.236	1889	0.176
1885	0 175	1890	0.179
1886	0 184	1891	0.168
1887	0.185	1892	0 137
1888	0 172	1893	0.229

The following, showing the annual mortality from several sources per million persons living at all ages in successive periods and years, is taken from "Vital Statistics," by Arthur Newsholme, published by Swan, Sonnenschein & Co., London, 1899, p. 320:

	1861-70	1871-80	1881-90	1891-95
Typhus	885	57	14	4
Enteric (typhoid)		322	196	174
Ill defined		103	25	8

The following table ("Vital Statistics," p. 203) shows the attack-rate and death-rate per 100,000 living from typhoid fever for the entire population of the city of London at each age period in 1896 for the two sexes:

	Attack rate— Males.	Death rate— Males.
All ages.	117	26
20	107	22
25	60	19
35		

The report of Reed, Vaughn and Shakespeare, p. 94, gives the following data for Second Corps:

	Attack rate— Males.	Death rate— Males.
1st and 3d Army Corps, 1898	21,560	1,947
2d Army Corps, 1898	11,238	1,070

The mortality for the First and Third Corps together is about ninety-two times the corresponding loss in the city of New York, and twenty-eight times that of the city of Cincinnati, Ohio. The entire male population is included in the calculation for the cities. The First and Third Corps were men picked carefully for physical soundness less than six months previously. The attack-rate was about 184 times that of the city of London for 1896. The General in command of the Second Army Corps, in his testimony before the investigation commission, pp. 233-234, said: "I believe that the water, when it came from the wells, was as pure as when filtered; in other words, I would rather drink the water that came from the wells but I, of course, subordinated my opinions in those matters to my medical officers."

The General in command of the First and Third Corps says in his testimony, p. 3080, speaking of the water at Camp Thomas, Ga.: "Another well lying on the road between the Alexander House and Jay's Mill was also condemned. I drank of that well water every time I passed it until somebody broke the pump to pieces. I suppose it was some of our energetic medical fraternity who had spent their time in finding that there was a suspicion of these two wells."

Among the conclusions of Reed, Vaughn and Shakespeare are the following (pp. 178-188):

13. Typhoid fever is more likely to become epidemic in camps than in civil life, because of the greater difficulty of disposing of the excretions from the human body.

14. A man infected with typhoid fever may scatter the infection in every latrine in a regiment before the disease is recognized in himself.

15. Camp pollution was the greatest sin committed by the troops in 1898.

18. Many commands were allowed to remain on one site too long.

19. Requests for change in location made by medical officers were not always granted.

20. Superior line officers cannot be held altogether blameless for the unsanitary conditions of the camps.

As we have already seen, some of the regiments were improperly located from a sanitary standpoint. This was done by superior line officers, and sometimes in the face of protests from the medical officers. We have also seen that requests for change in location were disregarded, and regiments were allowed to occupy one site for too long a time. In general, the camps became very filthy. It must therefore be admitted, it appears to us, that line officers were to some extent responsible for the condition of the camps under their command. The medical officer can only recommend, the line officer can command.

21. Greater authority should be given medical officers in questions relating to the hygiene of camps.

In our opinion, it is of the greatest importance that more authority be granted medical officers in all matters pertaining to the hygiene of camps.

22. It may be stated in a general way that the number of cases of typhoid fever in the different camps varied with the methods of disposing of the excretions.

42. The continued fever that prevailed among the soldiers in this country in 1898 was typhoid fever.

At the second session of the Fifty-Sixth Congress, December 6, 1900, Mr. Hay introduced in the House of Representatives the following bill, which was referred to the Committee on Military Affairs and ordered to be printed:

A BILL.

To define the duties of the Medical Department of the Army of the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the duties of the Medical Department of the army of the United States shall be as follows:

1. The direction of measures for the prevention of the ingress of disease among the troops of the army and of sanitary faults in location, construction (and management) of posts and camps.

2. The medical and surgical care of diseased and injured officers and soldiers of the army of the United States; the physical examination of all officers and soldiers entering or leaving the army of the United States.

3. The care (of) and accountability for all transportation pertaining to the movement of men and supplies of the Medical Department and (of) the sick and injured of the army.

4. The preparation and preservation of the records of transactions taking place under the three preceding paragraphs.

5. It shall be the duty of the senior medical officer of the (army), corps, division, or brigade (territorial division or department), in which an unusual outbreak of disease shall have arisen to at once take steps to investigate and determine the reasons therefor.

Should this investigation show any carelessness or inattention to duty, either upon the part of the medical officer or of the officer in command at the infected point, he shall at once make report (of the facts) to the officer in command (of the army, corps, division, or brigade, territorial division, or department), whose duty it shall then become to bring the offending officer or officers before a court-martial for such punishment as, upon conviction, the court may deem proper and the reviewing authority concur in.

6. The Secretary of War is hereby authorized and directed to prepare suitable regulations for the enforcement of the provisions of this act.

7. The Medical Department shall also perform such other duties as the President or the Secretary of War may deem for the best interest of the army.

All acts and portions of acts in conflict with the above are hereby repealed.

Should the ideas advanced in this paper meet with your approval, I most earnestly urge that you will take steps to have the public at large thoroughly informed on the subject. My object is and has been to obtain the best possible protection for the American soldier from preventable disease.

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DIAGNOSIS.

When called to a case, the young physician is apt to meditate more on what he shall prescribe rather than on what is the matter. As a student he was, perhaps, more diligently occupied in copying the pet prescriptions of his favorite teachers than in noting the care with which these same teachers sought to impress upon his mind the importance of diagnosis and the fact that a correct knowledge of the disease process, its cause and its natural course, must precede a rational therapy.

What the average practitioner thinks he wants, when, after a decade of practice, he attends a post-graduate school, is a knowledge of the new drugs and the latest method of treatment. He is satisfied with his ability to recognize typhoid fever, but has become discouraged because his last three cases died in spite of the treatment that had been so uniformly successful in scores of cases in years gone by. Had he made autopsies on his three cases perhaps he would have been surprised and shocked, and would have felt that his diagnostic, rather than his therapeutic, ability was at fault when he discovered no evidence whatever of typhoid, but an empyema in the one case, an ulcerative endocarditis in another, a tubercular meningitis in the third. Failure to make autopsies, lack of rigid criticism by consultants who are too prone to agree with the attending physician, and neglect of careful and repeated examinations in all cases that are atypical or in any way obscure, render a physician overconfident in his diagnosis; he often blames therapy where the fault is that he failed to understand rightly the nature of the disease.

The ability to make a correct diagnosis is not entirely the result of native genius. As Cicero said about the making of a poet, the natural ability is of great importance, but the man of surpassing merit is he who joins to his native talent the power that comes from education. The man of quick perception, of logical mind, and with acute special senses may make a rapid and apparently intuitive diagnosis. But in its ultimate analysis such a diagnosis is the result of study of books, and of experience at the bedside and in the laboratory; it implies weighing of probabilities and close logical reasoning; it is far from intuitive. This is the hard lesson to teach the young man who becomes discouraged as he ploddingly works over his case and still is unable to name the malady, or grows careless through his effort to work as rapidly as his preceptor or his superior. But practice in this line brings improvement as it does to the pianist, who soon reads and plays at sight music that was at first entirely beyond his grasp.

Many diagnoses are made with positiveness. When technique is faultless one may at times be able to pronounce a case tuberculous, or to declare the nature of a fragment of tumor, or the presence of fluid is proven by aspiration or a fracture recognized by crepitus, etc. Yet while the learned and trained physician is the most positive in his diagnosis when he is sure of his ground, no one is more cautious and guarded when positive signs are lacking, and no one more candid in saying, "I do not know." It takes some men many years before they attain that mental attitude commanding the wide horizon and giving them the clear vision so that they can look about and declare openly, "I do not know." Some men never reach this high plane; others lack the courage to confess what seems to be ignorance. But the intelligent layman who has tried his physician and not found him wanting, is willing to accept this confession of limitation of human power; he recognizes the feebleness of human insight into the workings of Nature, and he waits patiently until the physician is ready to announce his decision. The physician who is honest in his diagnosis has nothing to retract; he is not obliged to "hedge."

The physician who has had impressed upon him early the importance of diagnosis, who realizes the diagnostic ability is not a gift but an acquirement, and who gives his opinion not prematurely and guessingly, but conscientiously and after full deliberation, may not be brilliant, and may add little to the world's store of knowledge, but he goes about doing good; he commands the respect of his patients and his colleagues, and is free from the stings of conscience that come through mistakes committed through haste and carelessness.

THE DISTRIBUTION OF PHYSICIANS.

The recent census proves the source of not a few surprises in what concerns the distribution of physicians to the number of inhabitants in various parts of the country. It would not be surprising to find that doctors were most numerous in proportion to the population in the long-settled Eastern States. As a matter of fact this is not the case, however. California, Colorado, Kansas, Missouri, Iowa and Arkansas have more physicians to their population than any of the Eastern States except Vermont and Maryland. There are less inhabitants to each physician in Texas with its scattered population and magnificent distances than in Pennsylvania with its dense population, most of which is gathered into a few compact areas. Physicians are said to affect especially crowded centers of population, but some of these statistics would seem to contradict the old tradition and show that there is still a very large number of men who prefer a country life with its long, tiresome journeys to the pent-up city existence with its conveniences and social features, but absence of contact with nature.

With the exception of the District of Columbia, where, of course, many circumstances, such as political reasons, the glamour of fashion and of official life, and especially the presence of the medical headquarters of so many government departments, conspire to increase the number of physicians, California has more doctors to the population than any other part of the United States. The reputation of the State as a health resort is evidently responsible for this preponderance. Next after California in this matter comes Colorado, and for similar reasons. Physicians in delicate health are added to the practitioners who would naturally practice in the State, and, besides, graduates from a distance are attracted by the prospect of the superabundance of patients these States attract. For identical reasons Florida has distinctly a greater proportion of physicians to the population than any other Southern State.

It is evident from the census statistics that we must be rapidly approaching the limit of additions to the medical profession if the individual members are to find the practice of medicine a lucrative occupation. The New England States have an average of less than 600 inhabitants to each physician, New York has 596, while Pennsylvania provides 693 people for every doctor. New Jersey, with many health resorts but no medical school, and a rigorous examining board, has but one physician for every 881 inhabitants. The profession does not fare so well in the Middle Western States, where in Indiana there are but 519 people to each physician, in Ohio 529, in Michigan 575, and in Illinois 583. Meantime there are no special complaints of indigence among the members of the profession in California and the District of Columbia, though the number of inhabitants to each physician is respectively 392 and 389.

Curiously enough the distribution of the dentists of the country follows closely that of the physicians. They are thickest at the National capital, and after that in California. Colorado, for some reason not easy to understand, does not come third but is much lower in the list, the place being taken by Massachusetts. Utah has a very high place in the comparative number of dentists to the population, which would seem to show that the larger proportion of women in the State has led to the inevitable application of the rule of supply and demand. The prospects of making a living soon after graduation would seem to be still good in dentistry, the average number of dentists to the population of the country being only one to more than 4000 inhabitants.

HYPERTROPHY OF THE HEART.

Some new light has been thrown upon the manner in which the heart hypertrophies, and upon the causes that lead to cardiac hypertrophy both under physiological and pathological conditions, by the important work of Carl Hirsch.[1] Hirsch approached the problem in a somewhat different manner than previous observers; he employed more exact methods of study in that he separated the walls of the four cavities and considered each as an entity. This permitted the consideration of the relation of the mass of each cavity to that of the entire heart and of the general musculature of the body in health as well as in various diseases. It appears that the mass of the heart muscle is an expression solely of the work it accomplishes and that in sound individuals there is an intimate and direct relationship between the activity of the heart and the activity of the general musculature independent of conditions of general nutrition. Pregnancy was found to be of influence only in so far as it increased the activity of the muscles of the body as a whole. Glandular and nervous activity causes no direct effect upon the operations of the heart as expressed in its mass with the exception of exophthalmic goiter. Kaehl has demonstrated anatomically that the chief divisions of the heart are in reality quite independent of one another, and Hirsch shows that they are likewise independent functionally. Hypertrophy of one part may occur without any one of the other three parts participating. For example, in sclerosis of the thoracic aorta and splanchnic vessels the wall of the left ventricle is alone affected. On the other hand, in nephritis all sections of the heart are hypertrophied as a rule, a disproportional hypertrophy of the left ventricle being always due to vascular sclerosis according to Hirsch. In nephritis, however, the hypertrophy in incipient cases is limited more or less to the left ventricle, the other parts becoming hypertrophied as the disease progresses. Ewald suggests that in nephritis an increased viscosity of the blood is responsible for the hypertrophy of the heart, and since Hirsch's observations show that the obstruction to circulation must be of such character that the action of the whole heart is increased quite uniformly, Ewald's theory, although generally neglected, is considered by Hirsch to receive some support.

The opinion of Cohnheim that in weakness of the right heart the venous stasis may so increase the work required of the left heart that it may undergo hypertrophy, is widely accepted. But that this is the case Hirsch denies, citing in evidence cases in which there was protracted venous stasis without complicating valvular or arterial lesions and atrophy in place of hypertrophy of the left heart. This he explains by assuming that the accumulation of a large part of the blood in the vein lessens the amount of work that the left heart must do.

Another interesting observation is that in beer drinkers the hypertrophy known as "beer heart" indicates always an interstitial nephritis. Beer drinkers without nephritis have no hypertrophy of the heart.

In connection with these problems the study of the individual fibers in hypertrophied hearts by John Gutch[2] is of interest. He found that the increase in the size of the heart is to be explained by an increase in the size of

1. Deut. Arch. f. Klin. Med., 1899, lxiv, 597; 1900, lxviii, 55 and 321.

2. Jour. of Path. and Bact., 1901, vii, 309.

the individual fibers, and that there is no evidence of new formation of muscle cells. The fibers increase chiefly in breadth, possibly also somewhat in length. He corroborates the statements of Hirsch in regard to hypertrophy of both sides of the heart in nephritis. The fibers in the left side are usually larger than those of the right, and the papillary muscles have smaller fibers than the walls whether the heart is normal or hypertrophied.

JOURNAL OF THE ASSOCIATION OF MILITARY SURGEONS.

The first number (August) of a new medical magazine, the *Journal of the Association of Military Surgeons,* has just come to hand. It forms a volume of 224 pages, much of which in this issue is taken up with the proceedings of the association, lists of members, etc., though there are also several original articles. During the present association year it will be issued quarterly, but it is the intention to ultimately adopt the monthly form, and to devote the space in future issues more fully to original contributed matter. The *Journal* occupies a hitherto unfilled niche in American medical journalism and it has our cordial wishes for its success. The list of the membership of the association it represents shows that it starts with what ought to be a very respectable assured patronage. It is under the able editorial management of Dr. James Evelyn Pilcher, Captain (retired), U. S. A.

THE PATHOLOGICAL INSTITUTE OF THE NEW YORK HOSPITALS.

The Pathological Institute of the New York State Hospitals is being reorganized under the auspices of the state commission in lunacy, which has appointed an advisory board of leading specialists in psychology, general biology, pathology, neurology, psychiatry, etc. The appointees represent the three university medical schools of the city of New York, namely, Cornell, Columbia and Bellevue, and also the asylums. The appointments are permanent, except those from the asylums, which are elective for a term of two years, thus permitting all the institutions to be represented in rotation on the board. It is the idea in the reorganization to utilize the institute for special instruction of the asylum staffs in psychiatry and research methods, as well as to encourage original work in the various sciences having a bearing on insanity. It is, therefore, to have its future location in connection with one of the divisions of the Manhattan State Hospital on Ward's Island until such time as a reception hospital for the insane can be provided. The advisory board includes Professor J. McKeen Cattell of Columbia University, Professor Ewing of Cornell University, Professor Herter of Bellevue, Dr. Henry Hun of Albany, Dr. Hermon C. Bumpus of the American Museum of Natural History to represent the department of general biology, Drs. Pilgrim and Macdonald representing the state hospitals, and Dr. Frederick Peterson ex-officio as president of the lunacy commission. With this advisory board and a competent working staff who will be selected, we shall look for first-class work from the institute. Its success will, we trust, incite other States to follow the example of New York, and it is to be hoped it will cause a marked advance in the appreciation of American psychiatry throughout the world.

A CAUTION TO MEDICAL WRITERS.

We had occasion to call attention editorially not long since to a method of reporting experimental work that seemed objectionable, as affording a chance for certain individuals to misconstrue facts and misrepresent and slander our profession. The special instance was then afforded by one of our English contemporaries; now we have a similar one among our domestic exchanges. A writer in the New York *Medical Record* of October 19, describing some disinfecting experiments, uses the following language: "Then followed a rest of several weeks, our victim going out of town. On his return, culture testing still proved that the staphylococcus pyogenes aureus was present, but guinea-pig inoculations showed it to be of lessened virulence." Here is material for the anonymous writer of the Humane Society, or that section of it that is proving the atrocities of human vivisection, to dilate upon. "Our victim" had, as the report shows, undergone finger scrapings and loss of pieces of skin; he had been scraped and skinned, as the humane individual could say, and this would afford all the text required for any amount of virtuous horror at such an instance of human torture. It would, of course, not be necessary for such purposes to quote the context, and any medical explanation of the facts could be ruled out as coming from those disqualified as being, in sympathy at least, participants in the outrage. Medical writers should be more careful and not expose themselves in this manner when the antivivisection wolf is about searching for such titbits to devour.

LEPROSY AND THE MOSQUITO.

The spread of leprosy in the Hawaiian Islands is attributed to some extent to the mosquito by the local health authorities. There are cases that occur that are otherwise unaccountable, a fact that will hardly increase the mental quietude of those who are mosquito bitten in a country where leprosy exists. Of course, this mode of infection must be extremely rare, for mosquito bites are common, and these unaccountable cases are few in number. It seems probable that the indictment against the mosquito will be, as time elapses, a much heavier one than has been as yet conceived; it is the most efficient little inoculating machine that was ever contrived, and it seems to have a constitution suited to take up and carry about a number of uncomfortable things for the human species. It is said that it did not exist in some at least of the Pacific Islands originally, but was introduced after their discovery by white men. Herman Melville, in one of his works that is not altogether fiction, attributes its introduction to the Society Islands to a whaler, who, out of spite against some natives, landed a cask of larva-breeding fresh water on one of the islands. If this is true it has turned out to be a veritable Pandora's box to the natives, with far greater possibilities of evil than he in his malice designed. At present malaria, leprosy, elephantiasis and probably other mosquito-borne diseases

prevail locally or universally in the islands, and it would be an interesting study to trace up their medical history in all the different groups so as to determine how far the contact with civilization has been their causal factor.

INFECTION OF THE URINARY BLADDER FROM THE INTESTINE.

We have on a previous occasion[1] referred to observations made by Dr. R. Faltin with regard to infection of the urinary bladder in connection with disorders of the rectum. In order to determine whether such infection is a local process that takes place through the intermediation of the lymph stream or is merely part of a general process through the intermediation of the circulation Faltin[2] undertook a further experimental investigation, as a result of which he concludes that coprostasis induced by occlusion of the anus of from thirty-six to forty-eight hours' duration is not sufficient in general to cause an inundation of the body with intestinal bacteria. After artificial coprostasis of sufficiently long duration such changes in the intestine may take place that intestinal bacteria may gain entrance into the circulation either directly or through the intermediation of the peritoneum. Elimination of bacteria through the kidneys is possible under such conditions, but like the bacteremia itself it is to be looked upon as an antemortem process. Transitory bacteremia can not be produced. Following coprostasis of sufficiently long duration, intestinal bacteria may appear in the urinary bladder without first having entered the circulation. Under these circumstances such alterations in the organism have generally taken place that subsequently general infection, probably originating from the injured intestine or the bladder, often results. The bacteria in some cases gain entrance into the bladder by way of the urethra, in other cases probably by a direct route along the lymph paths, but whether through the lesions of the urethral mucous membrane or through injuries in the anal region has not yet been determined. Should retention of urine exist or have existed in consequence of ligature of the urethra, the presence of bacteria in the bladder is more frequent and cystitis may develop. It is pointed out that the foregoing conclusions are applicable only to experiments on rabbits, and it is not maintained that absorption of bacteria from the intestine and elimination of bacteria through the kidneys from any cause are in man always antemortem processes. While probably this is often the case, many clinical observations, as for instance in cases of typhoid fever, indicate clearly that bacteria may be absorbed from the intestine and eliminated through the kidneys without death necessarily following.

1. The Journal A. M. A., Sept. 14, p. 704.
2. Centralblatt für die Krankheiten der Harn- und Sexualorgane, B. xii, H. 9, p. 465.

Medical News.

ALABAMA.

Smallpox.—The Health Officer of Jackson County reports 14 cases of smallpox among negroes at Hollywood.

The **Medical College of Alabama,** Mobile, opened October 12 with an address by the dean, Dr. George A. Ketchum.

Health of Montgomery.—The report of the Sanitary Department of Montgomery for the fiscal year shows a marked decrease in the cases of diphtheria and smallpox, and an increase in scarlet fever, as compared with the previous year. The total number of scarlet fever cases was 151, all of mild type. During the current year 6 cases of diphtheria and 13 cases of smallpox were reported, the respective figures for the previous year having been 14 and 268.

ARIZONA.

Personal.—Dr. Oscar Brandon, Nogales, has located at Naco.——Dr. F. L. A. Hamilton has moved to Nogales from Wagoner, Ind. Ter.

"Manila Itch" is said to be almost uncontrollable in the Gila Valley, at Solomonsville, Safford and other Mormon settlements. The disease was at first diagnosed as smallpox, and under rigid restriction and quarantine, soon disappeared. When, however, a "health officer" discovered that the disease was not smallpox, the restrictions were relaxed with the usual results.

Restriction of Tuberculosis.—The governor of Arizona intends to recommend the creation, under legislative authority, of a Territorial Board of Health, investing its officers with full power to quarantine and segregate persons coming into the territory afflicted with consumption, precisely along the lines of the power of the boards of health of the various states in quarantining against any dangerous contagious disease, and that a law be passed prohibiting consumptives from living in hotels and boarding-houses with well people, and requiring them to live upon the desert in such places or sanitariums to be provided, and in such localities where the possibility of contagion will be as greatly reduced as circumstances permit.

Campaign Against Tuberculosis.—The city council of Phoenix has passed ordinances to protect the public from tuberculous patients and prevent the spread of tuberculosis. The first of these provides for the placing of cuspidors or proper receptacles at street crossings and at parks, under the direction of the health officer, which shall contain disinfectants, and the second order that each room in a hotel, lodging-house or private residence, left vacant by a sufferer of consumption, shall be properly disinfected. A charge will be levied against the proprietor, or those who receive invalids, for each consumptive accepted, the sum to be applied to the fumigation of the room when the occupant leaves.

CALIFORNIA.

Smallpox and typhoid fever are reported from Walnut Grove, Sacramento County.

Dr. Thomas Howlett, formerly interne at St. Mary's Hospital, San Francisco, has been appointed resident physician at Dr. Clark's hospital, Gilroy.

University of California Medical School.—The Board of Regents of the State University has decided to take over the entire management of the medical school which heretofore has been only one among several medical and so-called medical colleges of the state.

COLORADO.

Dr. David I. Christopher, Colorado Springs, has been appointed house physician for the National Printers' Home at that place.

A physicians' business league has been organized at Victor, comprising membership from all over the district. It is for the purpose of social and intellectual intercourse and for the special advantage of the medical fraternity in protecting themselves against bad debtors.

Denver Diphtheria Deaths.—In the six years from 1889 to 1894, inclusive, before antitoxin was employed, 2272 cases of diphtheria occurred in Denver, with 827 deaths, a mortality of 36.4 per cent.; during the following six years since antitoxin has been in use, 1641 cases occurred, with 175 deaths, a mortality of 10.66 per cent.

Diphtheria, Scarlet Fever and Smallpox.—During September there were reported to the State Board of Health, 105 cases of diphtheria, 102 of scarlet fever and 15 of smallpox. Compared with August, these figures show an increase of 34 cases of diphtheria, and a decrease of one case of scarlet fever and 37 cases of smallpox.

Crusade Against Unlicensed Practitioners.—The State Board of Medical Examiners has obtained warrants for the arrest of Drs. Albert L. Bennett and J. Sterling Johnson, regulars; John T. Bass, Elizabeth C. Bass and H. Van King, osteopaths, and J. Howard Hiltz, magnetic healer, on the charge of practicing without having presented to the State Board of

Medical Examiners any diploma as a graduate of medicine; without having furnished any other evidence of graduation from a medical school; without having complied with the medical practice acts of 1881 and 1885.

CONNECTICUT.

Hospital Site Vetoed.—The mayor of New Haven has returned without his approval the order establishing a hospital for contagious diseases at Springside on account of its distance from the city.

In Memoriam.—At the semi-annual meeting of the Hartford County Medical Society, held October 16, obituaries on the following deceased members were pronounced: On Dr. George C. Jarvis, Hartford, by Dr. Horace S. Fuller, and on Dr. Sidney R. Burnap, Windsor Locks, by Dr. Joseph A. Coogan.

Dr. Patrick J. Callaghan, Waterbury, arrested on the complaint of the county health officer, on the charge of practicing medicine without a license, and fined $100 and costs, has appealed, and intends to test the validity of the state law. Dr. Callaghan's offense is that he had not registered with the county health officer as required by the medical practice act.

Personal.—Dr. Henry S. Noble has been elected superintendent of the Connecticut Hospital for the Insane, Middletown, vice Dr. Charles W. Page, resigned.——Dr. John E. Martin has succeeded Dr. Lawrence M. Cremin as attending physician at the New Britain General Hospital.——Dr. P. Frederick Metz, New Haven, charged with malpractice, will not appear for trial; he has forfeited his bond and left New Haven.

DISTRICT OF COLUMBIA.

District Diseases.—Diphtheria is on the increase in the District; 60 cases are in isolation in 33 houses. Of scarlet fever there are 23 cases, and of smallpox 9 cases.

Personal.—Drs. John W. Mitchell and William H. Hughes, both of Washington, have been appointed assistant surgeons in the Freedmen's Hospital.——Dr. Benjamin B. Wechsler, Washington, has located in Knoxville, Tenn.——Dr. A. L. Swain, Washington, has moved to Athol, Mass.

Ask Adequate Remuneration.—The Board of Medical Supervisors of the District in its annual report calls the attention of the Commissioners to the fact that no provision is made for the adequate compensation of the various boards of medical examiners, or of the Board of Medical Supervisors. The members of these boards perform their duties solely in the interest of the public, and, under existing law, receive for their services whatever happens to be left over from the fees paid by applicants for licenses after the necessary expenses of the board have been deducted. No member of the board of eclectic medical examiners has received a cent for his services. The average amount received per annum by each member of the board of homeopathic medical examiners has been $1.75; by the lay members of the Board of Medical Supervisors, $20, and by the members of the Board of Medical Examiners, $32.14. The total number of applications is 1559, and the total number of licenses issued is 1411. It therefore requests that provision be made to pay each member of the Board of Medical Supervisors and each member of the Board of Examiners $10 for each meeting attended.

ILLINOIS.

Smallpox.—Springfield now has 31 cases of smallpox, and cases have also been reported from Riverton and Rochester.

The De Witt County Medical Society has passed a resolution that no physician shall be eligible to membership unless he has practiced medicine in the county one year.

Physicians' Club Reception.—Drs. John H. Mannon and Charles W. Hall, who have recently returned from Europe, were given a reception by the Physicians' Club of Kewanee, October 11.

Hospital Addition Postponed.—Although more than $6000 has been subscribed for the addition to the Rockford City Hospital, it has been determined to postpone building until next spring and to devote the winter to the completion of the fund necessary for the erection of the building.

Personal.—Dr. Lewis A. McFadden, Peoria, a member of the board of aldermen, has been appointed Health Commissioner, vice Dr. William T. Sloan, resigned.——Dr. Robert E. Calhoun, Chesterville, is taking post-graduate work in Chicago. ——Dr. Arvid E. Kohler, Moline, is seriously ill at the Baptist Hospital, Chicago.

Moline Hospital Troubles.—The Moline Public Hospital staff has unanimously adopted resolutions asking the mayor to remove the present board at once, and in its place appoint a board of three physicians. Also to appoint an advisory board, to consist of physicians who shall be made regular members of the board as soon as the law can be changed by the legislature, making the board legally consist of seven members, instead of three, as at present.

St. Francis' Hospital Staff.—The medical staff at St. Francis' Hospital, Peoria, consists of Dr. Rufus A. DuMars, president; Dr. Ernest B. Studer, secretary, and Drs. Charles E. Davis, Alvin N. Keith, Frank C. Bourscheidt, Clifford N. Collins, Lewis A. McFadden, William H. Willis, Roland L. Green, Joseph V. Studer and Joseph J. L. Finnell. Dr. Edwin H. Bradley is the oculist, and Drs. Joseph Studer and Leonard H. Spalding comprise the consulting staff.

Chicago.

Medical Examiners Dine.—The medical examiners of the New York Life Insurance Company held a conference and dined together, October 19. Dr. Harry P. Woley presided, and among the topics discussed were family history, venereal disease, albuminuria and appendicitis.

To Avert Smallpox.—With a view to prevent the importation of smallpox, Chief Medical Inspector Dr. Heman Spalding, of the Department of Health, is visiting neighboring towns and aiding the local authorities to check the disease. He has recently visited Harvey and New Holland, Ill., and Michigan City, Ind.

"Passing-up" Prohibited.—President Harper welcomed 275 Rush medical students, both freshmen and sophomores, into the University of Chicago at Kent Theater, October 15, and then officially informed them that hereafter "passing-up" students and other ungentlemanly conduct in the lecture-rooms would not be tolerated.

University of Chicago Medical Club.—The first meeting of this Club, a medical society organized by the University of Chicago, was held at the Hull Physiological Laboratory, October 21. A paper was read by Dr. Jacques Loeb, on "The Influence of the Valency and Possibly the Electrical Charge of Ions Upon Their Antitoxic Effects," and one by Dr. Albert Peacock on "A Case of Myiosis in Man."

St. Gerard's Hospital, established a year ago, is insolvent, and a receiver has been appointed. The liabilities are said to be $8300 with assets of $2400. The plan of the projectors of the hospital was to care for as many charity patients as the patients who pay could support. For several months the charity patients exceeded in numbers those who could afford to pay and the hospital's affairs grew worse constantly. The income was far insufficient and contributions practically stopped.

The Lowest Death Rate.—A total of only 370 deaths from all causes recorded last week establishes the lowest weekly death rate in the annals of the Health Department. The mortality is at the annual rate of 10.95 per thousand. The lowest rates during the previous five years were 11.04 for the week ended Nov. 10, 1900; 11.28, week ended Oct. 29, 1898; 11.72, week ended Nov. 27, 1897; 12.12, week ended Nov. 25, 1899; and 12.20, week ended Nov. 7, 1896—an average of 11.67, or 6.5 per cent. higher than last week's rate. This marvelously low figure is due chiefly to the decrease of deaths from apoplexy, bronchitis, cancer, consumption, convulsions, heart disease, nervous diseases and pneumonia—there being 31 fewer deaths from consumption alone and a total of 71 fewer from the diseases specified than during the previous week.

INDIANA.

Hammond Hospital and Training School has been incorporated at Hammond by Dr. John C. Pannenborg and others, with a capital stock of $10,000.

Diphtheria is so prevalent at New Albany that the Board of Health has ordered the schools to be closed, and all public meetings to be interdicted. The disease has reappeared at Knox.

Typhoid Fever.—There are 16 cases of typhoid fever at the State Reformatory, Jeffersonville, due in the opinion of the secretary of the State Board of Health to infected water supply.

Smallpox.—The situation at Mooerstown is improving rapidly.——Six cases have been reported from School District Number 1, Wabash Township, Adams County, and the public school in that district has been closed.

Medical License Cases.—Drs. W. F. Reinhardt and E. N. Flint, Indianapolis, have appealed from the decision of the

State Board, refusing them licenses.——Dr. George McD. Ober, Indianapolis, was arrested at Madison, October 11, for practicing without a license.——The Appellate court has modified its mandate in the action to revoke the physician's license held by Dr. Jacob B. Oliver, Brazil, so as to direct that a new trial be granted and further proceedings be had not inconsistent with the recent decision of that court reversing a judgment in Dr. Oliver's favor.

Expelled.—At a meeting of the Knox County Medical Society at Vincennes, October 14, Dr. Thomas H. Maxedon was expelled from the Society on the allegation of unprofessional conduct. The charges on which this action is based are that Dr. Maxedon sought notoriety in the newspapers; that he instituted suit against his fellow-practitioners, and that he recently gave improper testimony in a trial. Immediately after the expulsion, Dr. Joseph F. Somes resigned as a member of the Society. Dr. Maxedon claims that the action is summary, and that the charges are due to professional jealousy, and says that he will appeal for redress to the State Board.

Mortality in Indiana.—The reports to the State Board of Health for September show 2825 deaths, a rate of 13.6 per 1000 per annum. This is a decrease of 107 as compared with the preceding month and a decrease of 296 as compared with the corresponding month of 1900. All the cities in the State, with a population of 847,302, report 1052 deaths, which is a rate of 15.1 per 100,000. This exceeds the rate for the whole state by 1.5, and compared with the preceding months is a decrease in the rate of .4. The number of deaths classified according to important ages in the cities, was, under 1 year of age 221, 1 to 5, inclusive, 89, 65 and over 219. The country deaths numbered 1773, a rate of 12.9 per 100,000, which is 2.2 less than the city rate. The death rate from pulmonary tuberculosis in the country was 121.3, and for the cities 141.1 per 100,000. The typhoid rate for the country was 98.6, cities 76.3. The diphtheria rates, rural and urban, were 12.4 and 27.3 respectively. The diarrheal rates were, rural, 177.6; urban, 162.7; puerperal fever shows a rural rate of 2.9 and an urban rate of 4.3. This reverses the usual order. The cancer rate was, rural 46.7, urban, 59. Only in typhoid fever and diarrheal diseases does the rural rate exceed the urban. Tuberculosis caused the greatest number of deaths, 296; of these 264 were from pulmonary tuberculosis. The deaths from typhoid fever numbered 188; diarrheal diseases, 356; diphtheria, 36; scarlet fever, 4; whooping cough, 16; pneumonia, 73; cerebrospinal meningitis, 17; influenza, 4; puerperal fever, 7; cancer, 105, and violence, 113.

MARYLAND.

State Examination.—The State Board of Medical Examiners will hold the semi-annual examinations for license to practice medicine at the Medical Hall, Baltimore, November 6 to 9. The subjects are anatomy, physiology, surgery, hygiene, practice, pathology, chemistry, medical jurisprudence, materia medica, therapeutics, obstetrics and gynecology. A fee of $10 must accompany each application.

Baltimore.

Dr. **Edmund G. Waters,** while visiting a patient, October 18, fell down a stairway and fractured his left leg.

The **mortality** for the week ending October 19, was 177, or 17.77 per 1000 per annum. The white rate was exactly one-half of the black.

Yale's **Bicentenary.**—On October 22, at the bicentennial celebration of Yale University, Professor Wm. H. Welch, of this city, delivered an address on "Yale in Its Relation to Medicine," and Dr. Daniel C. Gilman, one on "Yale in Its Relation to Science and Letters."

Personal.—Dr. Jose L. Hirsh has returned from his wedding trip.——Dr. Charles E. Simon has returned from summering in Nova Scotia.——Dr. Jessie E. Sweet, who has completed a course at the Presbyterian Eye, Ear and Throat Charity Hospital, has returned to her home, Pine Bluff, Ark.

Detention **Hospital.**—Mr. Jeffrey R. Brackitt, president of the Board of Charities and Corrections, recommends the establishment of a temporary place of detention for emergency insane cases in the central part of the city. Attention was called to such a provision by the death of an insane patient shortly after being committed to jail last July.

St. **Joseph's Hospital Annex.**—The $30,000 annex to St. Joseph's Hospital will be opened November 5. The fund for its erection was raised by the Ladies' Auxiliary. It will accommodate about 75 patients, bringing the total capacity of the institution to 275. A steam laundry and a crematory for the burning of bandages, dressings, etc., have been installed. The addition will contain two negro wards and ten private rooms. It is in the rear of the main building.

Tablet to Professor Martin.—A large and beautifully framed bronze tablet to the memory of the late Professor Henry Newell Martin has been erected in the corridor of the biological laboratory at Johns Hopkins University. It bears this inscription: "In Commemoration of Henry Newell Martin of Neury, Ireland, A Graduate of the Universities of Cambridge and London, Fellow of the Royal Society, the First Professor of Biology and of Physiology in This University. By his brilliant work as investigator, teacher and author, he advanced knowledge and exerted a wide and enduring influence. Appointed in 1876. Resigned in 1893. Born in 1848. Died in 1898." A memorial meeting to the late Professor Henry A. Rowland, of the same institution, will be held in the physical laboratory, October 26, when Dr. T. C. Mendenhall, former president of the Worcester Polytechnic Institute, will make the address.

MASSACHUSETTS.

School Inspection in Worcester.—Dr. John T. Duggan, Worcester, chairman of the committee appointed to consider the matter of medical inspection in the public schools of that city, has asked for an appropriation of $3000 for that purpose.

West Roxbury Hospital.—Through the liberality of Abby L. A. Faulkner, Jamaica Plain, a hospital is to be erected and devoted to the care of the sick in the section of Boston known as the old town of West Roxbury. The buildings are to cost about $100,000.

Tuft's College Medical School.—The formal opening of the new medical and dental building of Tuft's College, Boston, took place October 3. President Elmer T. Capen, presided; Dr. Frederick W. Hamilton, chairman of the executive committee of the trustees, presented the building to the medical and dental faculties, and Dr. Harold Williams, dean of the schools, made the address of acceptance.

Personal.—Dr. Francis E. Corey, Westboro, has moved to Redlands, Cal.——Dr. Frank A. Foster, Waltham, has disposed of his practice and moved to Newton.——Dr. Leslie H. Hendee, Palmer, has moved to Westfield.——Dr. Homer Connor has opened an office in Haverhill.——Dr. Francis Shaw, Worcester, has located in Somerville.——Dr. and Mrs. Charles Hale Cogswell, Boston, intend to spend the winter in travel.

MICHIGAN.

Virchow.—The Detroit Medical Society has sent a congratulatory cablegram to Dr. Rudolph Virchow.

Smallpox Fees.—The Calhoun County Medical Society has fixed the fee for attending smallpox cases at $10 a visit.

Personal.—Dr. J. W. Toan, Otsego, has moved to Grand Rapids.——Dr. T. Bennett Scott, Vernon, has sold his practice to Dr. Louis Fleckenstein, Port Hope, who is now taking a post-graduate course in Chicago.

Card Catalogue of Graduates.—The secretary of the medical faculty of the University of Michigan, Dr. G. Carl Huber, has prepared a complete card catalogue of the alumni and alumnæ of the medical department.

Hospital Site Accepted.—The Hospital and Home Association of Port Huron has accepted Charles Baer's offer of a hospital site of three lots, and $1000 in cash toward the erection of a new hospital building. It will be necessary to raise $20,000 by popular subscription.

MINNESOTA.

Diphtheria is reported in St. Paul and Sletten.

Licensed to Practice.—The State Board of Medical Examiners, on October 11, issued licenses to practice to 19 candidates.

Swedish Hospital.—The cornerstone of the new Swedish Hospital, Minneapolis, was laid with appropriate ceremonies, October 6. The building is to be three stories high and will cost about $40,000.

Compulsory Vaccination.—Until the Supreme court decides otherwise, not a child will be admitted to the public schools of St. Paul until it has been furnished the required certificate of vaccination. This dictum of Dr. Justus Ohage is being combatted by the local anti-vaccination society. In St. Paul fully 2000 children are not attending school on account of failure to comply with the requirements of the Health Department.

Smallpox.—Smallpox exists at Slayton, Murray County, and at Gary, Norman County.—There have been many deaths

among the Indians in Mille Lacs County.——The disease is reported among the scattering bands of non-reservation Indians who roam about the vicinity of Sandy Lake, north of Aitken and McGregor.—Six cases were reported in Minneapolis in a Polish settlement in one day.——Several cases have been reported at Pelican Rapids and the public schools at that place have been closed.

Owatonna Hospital.—The Owatonna Hospital Board has passed a resolution that each patient shall be furnished by his attending physician with a certificate of his condition, on a form to be furnished by the hospital board, which certificate shall be given to the superintendent upon admission to the said hospital; and that the said certificate shall show that at the time of admission the patient is not suffering from smallpox, diphtheria, measles, scarlet fever, or pulmonary tuberculosis, all which cases are barred from admission to the hospital.

Personal.—Dr. Joseph G. Skaro, Minneapolis, is critically ill with nervous exhaustion in a hospital in that city.——Dr. John R. Petersen, Madison, is taking a post-graduate course in Philadelphia.—Dr. George G. Eitel, Minneapolis, is studying in Berlin.——Dr. James B. White, Montgomery, is about to locate in Faribault.——Dr. Ernest Z. Wanous, Rochester, has returned from a month's trip to the Atlantic seaboard.——Dr. Devereaux, Minneapolis, has located in St. Cloud.——Dr. H. C. Stuhr, Crookston, has opened an office in McIntosh.——Dr. Frank C. Davis, Minneapolis, is taking post-graduate work in Berlin.

MISSOURI.

Epidemic Disease.—Smallpox is reported at Cawood and Kansas City; scarlet fever at Hartville, Springfield, Ozark and Billings, and diphtheria in Springfield.

Marion-Sims-Beaumont Laboratory.—The new laboratory of the Marion-Sims-Beaumont Medical College, St. Louis, is now ready for occupancy. Dr. Meade Bolton, of Johns Hopkins University, has been elected director of the laboratory.

Personal.—Dr. Charles B. Lawrence, Stet, has moved to Woolstock, Iowa.——Dr. John Powers, Urich, has located in Clinton.——Dr. Thomas J. Halsey, Triplett, Chariton County, has moved to Drexel.——Dr. R. S. Bennett, Drexel, will spend the winter in study in New York.

Dr. James A. Manahan, Kansas City, assistant city physician, who was summarily discharged by the mayor, a few days ago, claims that the mayor has no authority in the matter, and that only the city physician, Dr. George O. Coffin, has the right to discharge him. He accordingly reports for duty as usual.

Virchow Banquet.—On October 13, one hundred and ten physicians and scientists met at St. Louis, at a banquet held in honor of the eightieth birthday anniversary of Rudolph Virchow. Dr. Robert Luedeking presided. Addresses were delivered by Dr. Hugo Summa on "Rudolph Virchow"; by Dr. Willard Bartlett on "Virchow the Pathologist"; by Dr. Amand N. Ravold on "What Hygiene Owes to Virchow"; by Dr. Robert Terry on "Virchow's Work in Anthropology"; by Mr. Charles Nagel on "Virchow as a Public Man," and by Mr. Perry Post Taylor on "Medicine as a Cosmopolitan Science."

NEW JERSEY.

Diphtheria is prevalent in Bloomfield, where 18 cases have been reported, and Brookside school has been closed for fumigation.

The Lost Hospital.—Crawford had an isolation hospital last spring. It was a substantial wooden building, 22 by 22 by 10 feet. A few days ago the chairman of the Board of Health went to inspect the hospital and could find no trace of it.

Panic in Hospital.—Fire caused a panic in the Paterson General Hospital, October 8, which might have been attended with serious results but for the coolness displayed by the superintendent and nurses. The patients were promptly removed and the fire extinguished.

Hospital Changes.—Dr. Norman L. Rowe, whose term as house surgeon at Christ Hospital, Jersey City, expires November 18, will be succeeded by Dr. Souloff. Dr. Darling has been appointed ambulance surgeon.——Dr. W. J. Hickson, resident physician of the Atlantic City Hospital, has resigned.

Dr. D. Warren Poor, East Orange, has been appointed medical inspector of the Orange public schools. His duties consist in responding to the call of the superintendent, examining suspects, and if he finds them afflicted with an infectious or a contagious disease to send them home with instructions to consult a physician. It will not be his duty to treat the cases. For more than a year Dr. Edgar C. Seibert, president of the board, has been urging the necessity of inspection, and Dr. M. Herbert Simmons one of the commissioners, and Superintendent William M. Swingle have ably seconded his endeavors.

Endorsement of McKinley's Physicians.—Dr. Charles F. Lehlbach, Newark, secretary of the Practitioners' Club of that city, has transmitted the following preamble and resolutions: "The Practitioners' Club of Newark, N. J., at its regular session, October 7, 1901, desires to express its highest appreciation of the courage, skill and professional ability displayed by the physicians in attendance upon the late President William McKinley: Be it therefore resolved, that the club regrets exceedingly that so unjust, uncalled for, unfair and arrogant a criticism should be made as appeared in the *New York Medical Record* of September 21, and hereby expresses its indignation and disapprobation. The club resolves furthermore, that a copy of this resolution be forwarded to the publishers of the *Medical Record, American Medicine*, and THE JOURNAL of the American Medical Association.

NEW YORK.

Personal.—Dr. Myron W. Hunt, Holland Patent, has located in Canastota.——Dr. Charles B. Sprague, Pottersville, will take a course of post-graduate study in New York City.

Elmira Isolation Hospital.—The health authorities of Elmira are having difficulty in obtaining a site for their isolation hospital. There is urgent need for such an institution, as a few cases of smallpox still exist in the city.

To Enforce the Ordinance.—A crusade against delinquent physicians who fail to make official reports of the cases of pulmonary tuberculosis which they are called to attend has been decided on by the health bureau and law department officials of Rochester.

New Rochelle Hospital Troubles.—The medical staff of the hospital at New Rochelle has resigned because the board of governors has passed a resolution making their terms only one year. The ten leading physicians of that city formed the medical staff. They say it was agreed that once a physician was appointed to the staff he should enjoy a perpetual tenure of office.

New York City.

New Harlem Hospital.—The Board of Estimate has authorized a bond issue of $275,000 for the construction of a hospital in Lenox Avenue between 136th and 137th streets, to be known as the New Harlem Hospital.

Merchant Marine Hospital Service.—Dr. William T. Jenkins, who has been in Europe for six weeks, is organizing a Merchant Marine Hospital Service to afford medical service to foreign merchant seamen in New York and other ports.

New Woman's Hospital.—The new hospital which the trustees of the New York Medical College and Hospital for Women are erecting as an addition to the present building will probably not be completed before the first of next year. The building will cost $45,000, and all but $6,000 of this had been secured before the new hospital was begun. At present over $3,000 more has been collected. The new addition will contain eighty rooms, besides a large operating theater and other necessary offices.

New York School of Clinical Medicine.—A course of clinical lectures with demonstrations will be given at the New York School of Clinical Medicine, 328 West 42d St., on Tuesday evening, commencing October 22. Members of the medical profession are cordially invited. The following subjects will be considered in the autumn course: October 22,—"Various types of chronic endometritis and their treatment," by Dr. Augustin H. Goelet; October 29,—"Scalp wounds and cranial fractures," by Dr. Thomas H. Manley; November 5,—"Some new studies on delirium tremens and alcoholic toxemia, illustrated," by Dr. Thomas D. Crothers; November 12,—"The operative treatment of traumatic and pathological lesions of the joints," by Dr. Robert H. Cowan; November 19,—"Diseases of the naso-pharynx and their treatment," by Dr. Max J. Schwerd; November 26,—"Diseases of the testes and their investments," by Dr. Carl E. Pfister; December 3,—"How to measure, fit and adjust the corset for movable kidney," by Dr. A. E. Gallant; December 10,—"Treatment of chronic gastric catarrh," by Dr. Heinrich Stern, and December 17,—"Trachoma —granulated lids—and its treatment," by Dr. J. Albert Meek.

OHIO.

Cornerstone Laid.—The cornerstone of the addition to St. Elizabeth's Hospital, Dayton, was laid with appropriate ceremonies, October 4.

Isolation Hospital.—The new smallpox hospital at Cleveland, two stories high and with four wards accommodating 80 patients and 8 private rooms, is ready.

Hospital Ward Donated.—Miss Sadie Tod, Youngstown, has notified the trustees of the City Hospital, Warren, that she will donate and equip a ward in the new hospital.

Fountain Park Sanatorium.—Drs. George W. Pickering and Robert Henderson, Urbana, have taken charge of the large hotel building at Fountain Park and will convert it into a sanatorium.

Dr. **George W. Crile,** Cleveland, has been awarded the Alvarenga Prize for 1901, for his essay entitled "An Experimental and Clinical Research into Certain Problems Relating to Surgical Operations."

Dr. **Albert P. Ohlmacher,** who recently left Gallipolis for Chicago, has been appointed non-resident director of the pathological laboratory of the Ohio Hospital for Epileptics, Gallipolis, and Dr. Theodore L. Chadbourne, at present assistant physician, was promoted to the position of resident pathologist.

Cleveland City Bacteriologist.—Dr. George C. Ashmun, Cleveland, has introduced an ordinance in the city council providing for the appointment of a city bacteriologist at a salary of $1500 per year, who shall work in conjunction with the health office, and who shall furnish trustworthy information respecting the purity and impurity of air, water, and all food substances, and for the prompt detection and prevention of dangerous infectious diseases.

Communicable Diseases.—Diphtheria is reported at Findlay, Cambridge and Zanesville.——Dresden, McConnelsville, Marietta and Cumberland have quarantined against Zanesville on account of the disease.——Smallpox has appeared at Newark, Zanesville and Chatham, and 12 cases are reported at Clay Lick.——Scarlet fever is increasing in Columbus, and the schools of Amanda have been closed on account of the prevalence of the disease at that place.

Personal.—Dr. Peyton E. Cromer, Piqua, has moved to Emporia, Kan.——Dr. Harry B. Kurtz, Leetonia, has located in Elkhart, Ind.——Dr. Yost, Lorain, has decided to locate in St. Paul, Minn.——Dr. Starling S. Wilcox, acting assistant surgeon, U. S. Army, has resigned and resumed practice in Columbus.——Dr. and Mrs. Thomas M. Sabin, Warren, have returned from a trip to Las Vegas, N. M.——Dr. P. R. Bennett, Urbana, has moved to Daytona, Fla.——Dr. William M. Lottridge, Portsmouth, intends to move to Newport, Ky.——Dr. S. D. Good, Newton Falls, has disposed of his practice and will take post-graduate work in New York and Chicago.——Dr. John R. Pipes, Cleveland, has located in Urbana.——Dr. George N. Simpson, Warren, has opened an office in Youngstown.

Fire at Gallipolis Hospital.—During the night of October 15, the pathological laboratory of the Ohio Hospital for Epileptics, Gallipolis, was totally destroyed by fire of unknown origin. Along with the destruction of a splendid equipment for pathologic research a more deplorable loss was sustained in the material which had been accumulated for four years by Dr. A. P. Ohlmacher, director of the laboratory, a material obtained from 176 thorough postmortem examinations of epileptics and including this number of epileptic brains, representing most if not all the phases of the morbid anatomy of the disease. These brains were all properly preserved and in good condition for future study, and numbered among them a remarkable series representing various types of epileptic idiocy and infantile cerebral paralysis. It is no exaggeration to say that this was the most complete and valuable collection of its kind in America. Dr. Ohlmacher's private collection of specimens of embryology, pathology and comparative anatomy was also destroyed.

Cincinnati.

The **Laura Memorial Woman's Medical College** has opened with a large initial enrolment of students.

St. **Mary's Hospital.**—At the October meeting of the staff of St. Mary's Hospital, Dr. Thomas Hays was elected to fill the vacancy occasioned by the death of Dr. T. P. White; Dr. H. Freudenberger was elected to the position of pathologist.

Higher Requirements.—The new state medical law requiring students of medicine to have an academic education before matriculating at the local colleges is causing a falling off in the sale of tickets for the clinics at the City Hospital. Heretofore about 250 tickets were sold annually, but this year only 166 have been taken out to date.

Personal.—Dr. Henry W. Bettman has been elected trustee to the Cincinnati Public Library in place of the late Dr. T. P. White.——Dr. Byron Stanton has been elected president of the State Board of Health, vice Dr. W. T. Gemmill, Forest, retired.——Dr. Daniel S. Young, one of the oldest and most esteemed local practitioners, is critically ill with pneumonia at the City Hospital.

PENNSYLVANIA.

West Penn Medical College, Pittsburg, opened for the year, October 2, with an unusually large attendance.

York Hospital.—The trustees of York Hospital are endeavoring to secure for the institution $4500 provided for in the act of assembly of 1874.

Reading Hospital Election.—On October 12, the managers of the Reading Hospital elected William B. Smith, president; Charles Rick, vice-president; Dr. Israel Cleaver, secretary, and P. R. Stetson, treasurer.

Epidemic Disease.—Diphtheria at Forestville has 12 cases.——Verona reports a dozen cases of typhoid and a large number of cases of diphtheria.——The schools of East Berlin, closed on account of diphtheria, have reopened.——Johnstown has 44 cases of scarlet fever, with 6 deaths.

Personal.—Dr. Benjamin H. Detwiler, Williamsport, was given a banquet by the profession of Williamsport and its vicinity, October 7, in honor of his seventieth birthday anniversary.——Dr. Levi F. Wagner, Pikesville, has moved to Reading.——Dr. Frederick E. Jenkins, Carbondale, has returned from the Philippines and is stationed at Fort Morgan, near Mobile, Ala.—Dr. Isaac Ohlman, Meadville, has decided to locate in Pittsburg.——Dr. John L. Wright, physician for the Pennsylvania Relief Association at Erie, has been transferred to Pittsburg.

Philadelphia.

Five Philadelphia hospitals receive $5000 each by the will of the late Thomas Elkinton of Philadelphia.

Smallpox.—This year there have been 287 cases of smallpox, with 36 deaths. Sixty new cases were reported during the last week and the municipal hospital now has more than 150 patients.

Personal.—Dr. S. Ashton Bonnaffon, of the Pennsylvania Relief Association, has been transferred to Erie.——Dr. Samuel McCullagh has resigned as resident physician of Girard College, and Dr. Henry G. Godfrey has been elected his successor.

Wills Hospital Changes.—Dr. William F. Norris has resigned after thirty years' service, as attending surgeon. Dr. John N. Kirk has been appointed resident physician, Dr. Paul J. Pontius, assistant surgeon, and Dr. George C. Harlan, consulting surgeon. Dr. William Zentmayer has been appointed attending surgeon, vice Dr. Norris, resigned.

CANADA.

G. M. McMicking, M.D., McGill, 1849, died, October 13, at his home in Toronto, aged 76. He practiced in Chippewa until 1867, and afterwards in Goderich for twenty-two years. He was a member of the legislature for twenty-two years.

Protestant Hospital for the Insane at Quebec.—The quarterly report of this hospital shows that 40 patients were admitted during that time, and that 13 had been discharged therefrom; 10 deaths occurred. The number at present undergoing treatment in this institution is 403.

Typhoid Among Troops.—Several of the officers and men of the Duke of York's Hussars, at Montreal, are suffering from attacks of typhoid fever. It is thought that the infection occurred at Quebec City, where the corps was participating in the arrival of the Duke and Duchess of Cornwall and York.

Canadian Nurses' Association.—The annual meeting of this Association was held in Montreal, on Tuesday evening, the 15th inst., Miss Rogers, the President, in the chair. The number of registrations reached 1034. During the present year the Association was incorporated by provincial charter.

Hotel Dieu Hospital, Montreal.—Hotel Dieu, the oldest hospital in the City of Montreal, has decided to establish a training school for nurses, so that hereafter French-Canadians and Catholics will not be dependent upon English institutions for trained nurses. The public will be appealed to for assistance in the project.

Personal.—Dr. Harry W. Spence, of Toronto, who has been taking a post-graduate course in England, has been successful in obtaining the degrees L.R.C.P. London, and M.R.C.S. England, and has been appointed surgeon on the steamer *Mombasa*, one of the British India Steamship Company's passenger steamers from London to Calcutta.

Montreal General Hospital.—The governors of this institution have declined an offer of $25,000 for twenty thousand feet of land adjoining the present site of the General Hospital. Dr. J. B. McConnell presented the report of the management committee. The receipts from May 15 to October 9, amounted to $5015, and the expenditure $5719. The debt remains about the same as at the annual meeting, viz., $7948.

School Children and Vaccination.—The officials of the Health Department of Montreal are making special efforts to ascertain if pupils attending the public schools are being properly vaccinated, owing to the appearance once more in that city of the dread disease, and also on account of there being so many cases of smallpox in the province. As vaccination is not compulsory in the Province of Quebec, an effort will be made when the legislature meets to make it so.

Conference on Smallpox.—Dr. P. H. Bryce, secretary of the Ontario Board of Health, and Dr. Pelletier, secretary of the Quebec Board of Health, held a conference with the local board of health, at Ottawa, on the 14th inst., with regard to the epidemic of smallpox in that city. It is a noteworthy fact that out of the first twenty-four cases of smallpox reported, but one had previously been vaccinated. There have been thirty-four cases in all; the outbreak is now well under control.

Failure of the Physicians' and Surgeons' Supply Company.—Some months ago mention was made in these columns of the formation in Ontario of a supply company of the above description for practitioners in this province. It was thought at the time the association was organized that physicians were not receiving fair treatment at the hands of the drug trade. The organization was perfected in November last; the company began business in March of the present year. A directorate of physicians controlled the affairs of the company, which is now being wound up.

Medical Graduates and the Army.—Cable dispatches record that a Canadian medical graduate has been refused permission to serve on the British Medical Staff in South Africa; and the action of the home authorities in this connection is raising in the minds of military surgeons the question: What has become of the promised imperial legislation to permit duly qualified and certificated graduates of colonial medical colleges to enter the imperial service? Some months ago the Militia Department at Ottawa was notified that an act of this character had been introduced into the imperial parliament, but since that time nothing more has been heard of the matter; and it is not known whether the promised legislation passed into law or was thought to be a too generous concession to colonial medical graduates.

FOREIGN.

Plague at Rio Janeiro.—Two new cases of bubonic plague were found October 19, and three on the 20th, making 52 cases at the present time in the hospital.

Physician Contracts Leprosy.—Dr. Feilberg, city physician of Copenhagen, has contracted anesthetic leprosy. He had recently visited the West Indies.

Leper Hospital in Iceland.—The Order of Odd Fellows in Denmark established the Laugarnoes Hospital for lepers, October, 1898. At the end of 1899, 81 patients had been received, of which 18 are dead, and 2 have been discharged as cured.

The International Congress for Obstetrics and Gynecology will be held in Italy in 1902. The Russians have made great efforts to secure the congress in honor of the completion of the Academy for Obstetrics and Gynecology at St. Petersburg, the only institution of its kind in the world, our foreign exchanges assert. It has been erected under Ott's supervision by funds supplied by the Czar. The congress committee, however, had already made arrangements for the meeting in Italy. The first congress was held in Brussels, the second in Geneva and the third in Amsterdam.

International Congress of Tropical Diseases.—The Egyptian Medical Congress announced to convene at Cairo in December, 1902, will be practically a congress of tropical diseases, and the committee in charge would be glad to enlarge its scope and announce it as an international congress for this purpose. The realization of this project, however, they know depends on the co-operation of those interested in epidemiology and tropical pathology the world over, and they scarcely venture to hope for this. The list of communications already announced includes studies of the diseases, etc., prevalent in Egypt and Ethiopia, divided into three sections, medicine, surgery and ophthalmology.

PARIS LETTER.

President McKinley's death has been the cause of various comments on the part of the medical and political press in France. There has been quite a diversity of opinion shown, and it would seem as if the political newspapers had tried to cast doubts upon the manner in which the treatment was carried out. Certain medical men, hiding behind a pseudonym, and signing themselves with an X., have given forth views which showed their lack of appreciation of the difficulties to be encountered in the treatment of so desperate an injury. On the other hand, in the medical papers of good standing, the quickness with which a decision was come to has been much praised, and it has been repeatedly said that nowhere but in America such ready adaptability to the requirements of the time could have been found. There was, however, one fact, which impressed all medical men having some knowledge of the course observed in penetrating wounds of the abdomen, and that was the highly optimistic tendency of the bulletins issued.

Rabies.

The last statistics of the Pasteur Institute show how beneficial the treatment of rabies by inoculation has become. According to Tardieu, Thamhayn and Bouley, out of 855 cases of people bitten by mad dogs and who were not treated, death took place in 46.6 per cent. of the cases. The physicians of Alfort, Toulouse, Lyons and Berlin consider that about a third of the patients bitten by animals suffering from rabies are affected later with hydrophobia. On the other hand, in 1886, the first year the new treatment was tried, 2671 patients were inoculated at the Pasteur Institute and only 25 died, which makes a percentage of 0.94 per cent. In the last three years, 1898, 1899, 1900, 4499 persons were treated by this method and only 11 died, which makes the very low record of 0.25 per cent. Roux and Nocard's researches have shown that if, after three or four days, the dog suspected of rabies has shown no specific symptoms, the person who has been bitten is running no danger of infection. The disease itself runs a course of 10 days, so this is a means of making the diagnosis.

Epidemic of Smallpox.

Dr. Roger, physician of the Aubervilliers smallpox hospital, has just published the statistics of the cases of smallpox in Paris during the first six months of the year. There were in all 1996 cases with 274 deaths. There were over a hundred cases in the 20th and 23d week. Certain parts of Paris have been singularly free from the epidemic, such as the Champs-Elysées quarter where there were only 23 cases. The neighborhood of hospitals seems to be particularly disadvantageous, the two quarters around the Aubervilliers and the Pasteur Hospital having the greatest number of cases, 258 and 360. The mortality in Dr. Roger's service is 24 per cent., which is rather large. There seems to be at present a smaller number of cases, but Dr. Roger does not consider that the epidemic is over and he recommends vaccination every three years, as numerous facts collected during the recent epidemic show that the immunity is of much shorter duration than was at first imagined.

Congress of Gynecology and Obstetrics.

At the recent Congress of Gynecology and Obstetrics held at Nantes, Dr. Baudron of Paris spoke of the method he used, which consists in simple dilatation, in cases of uterine anteflexion with dysmenorrhea and sterility. He compared it to the other methods used, such as hysterotomy or ventrofixation.

Dr. Varnier made a report on the treatment of uterine rupture and described the results obtained by the old methods, such as extraction of the child and tamponing, and others obtained of recent date by laparotomy. The latter are much better and Dr. Varnier said that it was hard to decide after manual examination per vaginam, if rupture was complete or incomplete. The best course to follow was immediate laparotomy. Professor Pinaud insisted on the dangers of uterine rupture; some cases did not seem at first so alarming. He advocated immediate laparotomy in all cases. Dr. Pinaud also spoke on the use of aniodol as an antiseptic. He has been using it extensively in his service at the Clinique Baudelocque, and has found that it can be used in washing the eyes of the newborn infants.

Artificial Horse Bites.—A French exchange states that a new means of defrauding the public has recently been discovered in Paris. An instrument was made which produced a wound resembling the bite of a horse and damages were claimed from the owner of the horse incriminated as the assailant.

Correspondence.

Regarding Propagation.

CHICAGO, Oct. 8, 1901.

To the Editor:—In the discussion of Dr. George J. Englemann's interesting paper on the "Increasing Sterility of American Women," reported in THE JOURNAL for October 5, there are exhibited a depth of concern and a degree of alarm that do not seem to be warranted by those disclosures in the Doctor's paper which furnished the material for the greater part of the discussion.

The chief facts shown in the paper are, that sterility has increased rapidly during the last century; that the present average percentage of childless marriages in this country is about twenty; that the average number of children per married couple is 1.8, and that the chief causes of this increasing sterility and diminishing fecundity are the intentional prevention of conception and interruption of gestation.

These are intensely interesting facts, and the labor which their accumulation must have cost the author, entitles him to the highest praise. It may also be conceded without argument that the condemnation which the professional abortionist, the advertiser of abortifacients, and the male distributers of Neisser's diplococci, received at the hands of those who discussed the paper, was entirely just. But the mere facts that 20 per cent. of American marriages are childless, and that the number of children per married couple is only 1.8, do not seem to warrant the alarm that was exhibited in their discussion.

If these facts forebode a danger that constitutes sufficient grounds for alarm, this danger must be one which menaces either ourselves and our actual descendants, or those potential individuals of the future whose actual existence is prevented by our increasing infecundity. There can be no danger that threatens any one else.

What danger is there in these facts for us or our descendants? Would the struggle for existence be easier, or the joy of living greater, if there were more people in America or in the world? Is there any profession, trade, or calling that is not already enormously overcrowded? If we need more tillers of the soil, why has the exodus from the country to the town gone so swiftly forward that 47.1 per cent. of our present population is in incorporated towns and cities? If there is, on the other hand, a village, town, or city in America that needs more people than it has, why is it necessary for so great a part of the existing urban population to live in tenements (which, by courtesy, are called flats), and support families on $6.00 a week? Every new child born into the world is a prospective competitor of those already here. It must elbow its unwelcome way into an already overcrowded world, in which it will find no nook or corner fit to live in that is not already occupied, and no vocation from whose representatives it will receive a welcome. Let us be frank and admit that, for us and our descendants, there is encouragement rather than peril in the alleged diminution of our rate of increase.

Taking the other horn of the dilemma, we shall find it equally ridiculous to talk of doing missionary work in the interests of possible children that have never even begun to be. It is here assumed that a child "begins to be" at the moment of conception.

According to Henle's estimate, every woman produces 72,000 ova, each one of which is susceptible of fecundation and capable of development into a mature human being. Every one of these ova that fails to become fecundated becomes a dead human possibility. Should we endeavor to bring about the fecundation of all? If not of all, who shall decide how many?

Let us again be frank and admit that, until we shall have ameliorated the condition of the actually existent, we need not concern ourselves with the fate of these shadowy hosts of the merely potentially existent. We may go still further and insist that it is not necessary to countenance abortion, to be able to say that a marriage which is comparatively barren of children, may still be prolific of happiness, and that to make the propagation of the species the sole aim of marriage, is to degrade that institution to the spiritual level of a breeding farm.

Indeed, in normal cases, it is questionable whether the definite desire for children ever is a motive to marry. Love of the consort certainly long precedes the desire for children, and is a sufficient inducement to insure the perpetuation of the race. Desire for children comes later; for Nature has a way of accomplishing her mysterious purposes by appearing to let us do what pleases us, and then pleasing us with what she has enticed us into doing against our wishes.

A. C. MCCLANAHAN, M.D.

Book Notices.

INTRODUCTION TO THE DIFFERENTIAL DIAGNOSIS OF THE SEPARATE FORMS OF GALLSTONE DISEASE, Based upon his own Experience Gained in 433 Laparotomies for Gallstones. By Professor Hans Kehr, Halberstadt. Authorized Translation by William Wotkyns Seymour, A.B. Yale, M.D. Harvard. Formerly Professor of Gynecology in the University of Vermont. With an introduction by Prof. Kehr. Cloth. Pp. 370. Price, $2.50. Philadelphia: P. Blakiston's Sons & Co. 1901.

The literature of gallstone surgery in our language of late years has become quite considerable. Nevertheless, the addition of this translation from a leading German work on the subject will be of value to American readers. There is no question as to the importance of the subject and if the operative treatment of these conditions has not become so extensive in this country as it has in Germany, as hinted in the preface, the book will doubtless serve to bring about this desirable result. Professor Kehr has himself added a preface to this American edition in which he gives his views as revised from his latest experiences. In the selection of operative methods he employs cystectomy with drainage in this condition more and more. In this way he says we avoid more certainly true and false recurrences. Professor Seymour has given us an intelligent translation, but it contains a great many German constructions and can not be said to be quite as elegant English as it might be. Still, it is hard for a person who reads German much or little to avoid such slips occasionally in the translation of a language so difficult as German.

THE ESTIVO-AUTUMNAL (Remittent) MALARIAL FEVERS. By Charles F. Craig, M.D. (Yale), Acting Assistant-Surgeon, U. S. A. Illustrated by 2 Colored Plates and 21 Clinical Charts. Cloth. Pp. 221. Price, $2.50. New York: William Wood & Co. 1901.

The author has given us in detail a description of certain fevers too little understood by the great mass of the profession. The opportunity presented to him while he was connected with military hospitals at home as well as in Cuba and the Philippines, was well utilized in a systematic and scientific study of the malarial diseases in their protean aspects, the result of which is published in this volume. He gives us an account of the estivo-autumnal parasites, describes them, giving their natural history, or life cycle within the mosquito, their varieties, method of staining, examination, etc. The etiology, pathology, diagnosis, prognosis, treatment, methods of infection, etc., of malaria are fully considered. The book is a most interesting addition to the literature on the subject and will be found invaluable to those who are desirous of understanding and thoroughly mastering the facts in regard to malaria. The manner in which the author has presented the subject is commendable in that it is simple yet scientific.

MANUAL OF THE DISEASES OF CHILDREN. By John Madison Taylor, A.M., M.D., Professor of Diseases of Children, Philadelphia Polyclinic, and William H. Wells, M.D., Adjunct Professor of Obstetrics and Diseases of Infancy in the Philadelphia Polyclinic. Second Edition, Thoroughly Revised and Enlarged. Illustrated. Cloth. Pp. 859. Price, $4.50. Philadelphia: P. Blakiston's Son & Co. 1901.

The authors have thoroughly rewritten their work, adding a number of new chapters and special articles. One of the points

in which it will be found up to date is that of infant feeding, and still other matters are also well brought up. Much new matter has been added to the portions on diseases of the nervous system and respiratory disorders. A chapter on ear diseases, which is a very important matter in children, has been added.

Deaths and Obituaries.

J. G. Kerr, M.D., Jefferson Medical College, Philadelphia, 1847, who was one of the best known medical missionaries in China, died at his home in Canton, China, aged 77. He was born in Adams County, Ohio, and for a time practiced in this country, but the past forty-five years he had devoted to his work among the Chinese. He was eminent as an operator for urinary calculi, and in 1898 was called to operate upon the American Minister to China. During the last few years he established and superintended an asylum for the insane, something previously unknown in that country. He also accomplished much in his translations of medical works into Chinese for the use of the students.

Philip Goode Gillett, M.D., for many years superintendent of the Illinois Institution for the Education of Deaf Mutes, died at his home in Jacksonville, Ill., October 2, aged 67. He was connected with the above institution in a minor capacity during his student days and became interested in deaf mute work and devoted all his energies in that direction. He was the first to introduce instruction in articulation and lip reading in a state institution, and he brought about the establishment of the Illinois State Board of Charities.

George W. Burke, M.D., Jefferson Medical College, Philadelphia, 1866, died at his home in New Castle, Ind., October 18, from Bright's disease, aged 59. During the Civil war he was an assistant surgeon in the 46th Pennsylvania and later in the 20th Army Corps, serving until the close of the war. He practiced for a time at Sulphur Springs, Ind., but for the past thirty-five years had practiced at New Castle. He was a member of the American Medical Association.

Charles H. Brown, M.D., University of the City of New York, 1879, died at his home in New York City, October 15, aged 45. He was for many years the managing editor of *The Journal of Nervous and Mental Diseases* and was connected with the New York Dispensary, the Post-Graduate and the Presbyterian hospitals, and the outdoor work of Bellevue Hospital.

Donald R. Hinckley, M.D., Harvard Medical School, Boston, 1896, shot and killed himself, probably accidentally, while visiting his parents at Northampton, Mass., October 14. He was a graduate of Yale University in the class of '92, and had been in active practice at New Haven, Conn., having recently been appointed instructor in the Yale Medical School. He was aged 31.

Joseph H. Wythe, M.D., Philadelphia College of Medicine and Surgery, 1850, died at his home in Oakland, Cal., October 14, after a long illness, aged 79. He was born in Manchester, England, and during the Civil war was assistant surgeon. He remained in the army for a number of years after the close of the war, and, after resigning his commission, studied for the ministry.

Robert Henry Nesbitt, M.D., College of Physicians and Surgeons, New York, 1899, died, October 10, at the New York Hospital of which he was once an interne. He had just returned from Europe when he was seized with his fatal illness, a strangulation of the intestine. His home was at Wheeling, W. Va.

Hiram P. Tuttle, M.D., University of California, 1869, died at Tacoma, Wash., October 9. He retired in 1898 in order to devote his entire time to the perfection of thorite, a high explosive, for the purchase of which Congress had made an appropriation at its last session.

Horace Bigelow, M.D., College of Physicians and Surgeons, New York, 1896, died in Roosevelt Hospital, October 15, from typhoid pneumonia, aged 28. He was born in Fayetteville, N. Y., and at the time of his death was a member of the outdoor staff of the hospital named.

Henry Raymond Rogers, M.D., Jefferson Medical College, Philadelphia, 1851, died at his home in Dunkirk, N. Y., October 19, aged 79. He retired from practice several years ago for scientific and literary work. As a writer he was noted for his original views.

Porter W. Felt, M.D., Detroit College of Medicine, 1882, died at his home in Belleville, Mich., where he had practiced for the past twenty years, October 12, from the result of an overdose of morphin, taken, it is believed, by accident. He was aged 44.

William W. Duval, M.D., University of Maryland, Baltimore, 1843, died at his residence, Gladswood, Prince George County, Md., October 13, aged 80. He was president of the county school board and identified for forty years with public education.

Hannah E. Longshore, M.D., Woman's Medical College, Pennsylvania, 1851, died in Philadelphia, October 18, aged 82. She was the first woman to practice medicine in the city named and served as a demonstrator of anatomy.

William G. Fisher, M.D., Medical Department Washington University, St. Louis, 1866, died at his home in Marshall, Mo., October 9, aged 57. He practiced for a number of years at Napton, Mo., moving to Marshall in 1896.

Herbert J. Hale, M.D., Detroit Medical College, 1875, died at his home in Grass Lake, Mich., October 3. At its recent meeting the Jackson County (Mich.) Medical Society passed resolutions of respect for his memory.

John Semple, M.D., Jefferson Medical College, Philadelphia, 1848, died at his home in Wilkinsburg, Pa., October 9, after an illness of two weeks, aged 80. He was burgess of Wilkinsburg from 1888 to 1890.

Frederick Loeber, M.D., New Orleans School of Medicine, 1866, died at his home in New Orleans, October 18, aged 63. He was for thirty-one years the head of the Touro Infirmary and was a prominent physician.

Samuel Edward Stiles, M.D., Long Island College Hospital, New York, 1870, died in Brooklyn, N. Y., October 9, aged 67. He was a noted genealogist and retired from active practice some years ago.

Wesley A. Vineyard, M.D., Tennessee Medical College, Knoxville, 1890, died at his home in Luttrell, Tenn., October 9, from heart failure, aged 41. He was a representative to the Legislature in 1900.

Edwin T. Edgerton, M.D., Pennsylvania Medical College, Philadelphia, 1851, died at his home in Saline, La., October 14, from the effects of a cancer, aged 75. He was a native of South Carolina.

Chester L. Gross, M.D., Jefferson Medical College, Philadelphia, 1861, died suddenly at his home in Pen Argyl, Pa., October 9, aged 65. He formerly practiced at Freemansburg.

Ernest Schottky, M.D., College of Physicians and Surgeons, New York, died at his home in Passaic, N. J., October 18, aged 56. He at one time resided in New York City.

William L. Harding, M.D., New York University, 1860, died at his home in New York City, October 11. He was a surgeon in the Union army during the Civil war.

Charles W. Lawrence, Jr., M.D., University of Tulane, New Orleans, 1900, died at his home in Longview, Texas, from typhoid fever, October 4.

J. H. Tabler, M.D., University of Tennessee, Nashville, 1892, died at his home in Lawrenceburg, Tenn., October 13, after a brief illness.

Jefferson M. Mason, M.D., University of Arkansas, Little Rock, 1888, died at his in Floresville, Texas, October 12, after a long illness.

W. A. Withers, M.D., Rush Medical College, Chicago, 1898, died at his home in New Orleans, October 14, after a long illness.

Societies.

COMING MEETINGS.

Medical Society of Virginia, Lynchburg, Nov. 5-7, 1901.

Oklahoma Territory Medical Association, Oklahoma City, Nov. 13, 1901.

Southern Surgical and Gynecological Association, Richmond, Va., Nov. 12-14, 1901.

Western Surgical and Gynecological Association, Chicago, Dec. 18-19, 1901.

Southern **California Medical Society** will meet at Los Angeles, December 4 and 5.

Central **Medical Association.**—At a meeting of this Association, held at Middletown, Conn., October 7, it was voted to retain the same officers for the coming year.

Holyoke **(Mass.) Medical Society.**—This Society met October 7 and elected Dr. C. A. Allen, president, Dr. D. F. Donoghue, vice-president, and Dr. J. J. McCabe, secretary-treasurer.

Inland **Empire Clinical Society.**—This Society was recently recognized by and affiliated with the Idaho State Society, thus giving the former the full privileges of a country or district medical association.

Guthrie **(Okla.) Medical Society.**—At a meeting of this Society, October 7, the following officers were elected: Dr. R. V. Smith, president; Dr. J. L. Melvin, vice-president, and Dr. E. O. Barker, secretary-treasurer.

Idaho **State Medical Society.**—The ninth annual meeting of this Society was held at Pocatello, October 3 and 4, and Dr. Hubert A. Castle, Pocatello, was elected president, and Dr. Ed. E. Maxey, Caldwell, re-elected secretary-treasurer.

Southern **Manitoba Medical Society.**—This Society was organized at Napinka, October 9, and the following officers elected: President, Dr. E. J. McConnell, Morden; vice-president, Dr. Frederick L. Schaffner, Boissevan, and secretary-treasurer, Dr. T. J. Lamont, Treherne.

Detroit **(Mich.) Academy of Medicine.**—The regular meeting of this Academy was held, October 8, and Dr. Arthur D. Holmes was re-elected to the presidency; other officers elected were Dr. Wadsworth Warren, vice-president, and Dr. Harrison D. Jenks, secretary-treasurer.

McKean County **(Pa.) Medical Society.**—At the meeting of this Society held in Bradford, October 8, the officers elected were as follows: Dr. William P. Burdick, Mt. Jewett, president; Dr. James C. Walker, Bradford, vice-president, and Dr. B. H. Hall, Bradford, secretary-treasurer.

Stafford **District (N. H.) Medical Society.**—The ninety-fourth annual meeting of this Society was held at Dover, October 9, and the following officers elected: President, Dr. William H. Nute, Exeter; secretary, Dr. Lewis W. Flanders, Dover, and treasurer, Dr. John R. Ham, Dover.

White **County (Ill.) Medical Association.**—At the regular meeting of this Association, at Grayville, October 15, the following officers were elected: President, Dr. V. H. Parker, Grayville; vice-presidents, Drs. J. N. Hopkins, Burnt Prairie, and I. A. Foster, Herald; secretary-treasurer, Dr. W. A. Steele.

Fergus **County (Mont.) Medical Association.**—This Association was recently permanently organized with the following officers: President, Dr. J. B. Atchison, Lewiston; vice-president, Dr. W. A. Long, Lewiston; secretary, Dr. Frederick Treacy, Lewiston, and treasurer, Dr. C. A. Tillotson, Gilt Edge.

Jackson **County (Mo.) Medical Society.**—At the meeting of this Society, held in Kansas City, October 10, the following officers were elected: President, Dr. William Frick; vice-president, Dr. Walter S. Wheeler; secretary, Dr. Edward H. Thrailkill, and treasurer, Dr. Louis W. Luscher, all of Kansas City.

El Paso **County (Texas) Medical Society.**—At the third annual meeting of this Society, at El Paso, October 12, the following officers were elected: President, Dr. S. T. Turner; vice-president, Dr. W. N. Vilas; secretary, Dr. J. A. Rawlings (re-elected), and treasurer, Dr. H. E. Stevenson (re-elected), all of El Paso.

Corsicana (Texas) District Medical Association.—At the regular meeting of this Association, October 8, the following officers were elected: President, Dr. T. A. Miller; vice-presidents, Drs. T. L. Slater, Re, and M. L. Langford, Corsicana; secretary, Dr. W. D. Fountain, and treasurer, Dr. L. E. Retton, both of Corsicana.

Tennessee Valley Medical Association.—This Association met at Athens, Ala., October 8 and 9, and elected the following officers: President, Dr. Felix E. Baldridge, Huntsville; vice-presidents, Drs. F. P. Pettey, New Decatur, and T. E. Casey, Albertsville; secretary, Dr. Thomas E. Dryer, Huntsville, and treasurer, Dr. Edgar Rand, Huntsville.

Cedar Falls (Iowa) Medical Society.—The annual meeting of this Society was held at Cedar Falls, October 8 and 9, and the following officers were elected: President, Dr. George B. Thompson, Winthrop; vice-president, D. M. Wick, Cedar Falls; secretary, Dr. T. U. McManus, Waterloo, and treasurer, Dr. R. E. Buchanan. The next meeting will be held in Waverly.

Jefferson County (Tenn.) Medical Society.—The physicians of this county met October 8 and reorganized this Society, which has been dormant for the past twenty years. The following officers were elected: Dr. L. M. Tittsworth, Jefferson City, president; Dr. C. L. Cline, White Pine, vice-president; Dr. S. W. Fain, secretary, and Dr. P. A. Tinsley, Dandridge, treasurer.

Medical Association of Northern New York.—At the meeting of this Association held at Plattsburg, October 8, the following officers were elected: President, Dr. Frank Madden, Plattsburg; vice-president, Dr. Walter S. Daly, Ogdensburg; treasurer, Dr. George H. Oliver Dickinson, and secretary, Dr. Alfred G. Wilding, Malone. Dr. Cassius D. Silver, Plattsburg, was elected delegate to the State Medical Association.

Albany County (N. Y.) Medical Association.—The members of the Second District Branch residing in Albany County met, October 9, and organized this Association, electing the following officers: President, Dr. Charles M. Culver, Albany; vice-president, Dr. Adam T. Van Vraken, Watervliet; secretary-treasurer, Dr. William B. Sabin, Watervliet; fellow, Dr. W. R. Lothridge, Verdoy, and alternate, Dr. John U. Haynes, Cohoes.

Tri-State Medical Society.—This Society, representing the states of Alabama, Georgia and Tennessee, met at Nashville, October 8, 9 and 10, and the following officers were elected: President, Dr. John C. LeGrand, Birmingham; vice-presidents, Drs. Pugh U. Brown, Troy, Ala., William P. Harbin, Rome, Ga., and James C. Wilson, Rockwood, Tenn.; secretary, Dr. Frank T. Smith, and treasurer, Dr. George R. West, both of Chattanooga. The next place of meeting is Birmingham, Ala.

San Joaquin Valley Medical Association.—At the annual meeting of this Association, held in Stockton, Cal., October 8, the following officers were elected: President, Dr. Henry Hildreth, Delano; vice-presidents, Drs. B. F. Surrhayne, Modesto, J. L. Carson, Bakersfield, and J. B. Rosson, Tulare; secretary, Dr. W. S. Fowler, Bakersfield; assistant secretary, Dr. D. B. Trowbridge, Fresno; and treasurer, Dr. T. M. Hayden, Fresno. The next meeting will be held in Fresno, the second Tuesday in March, 1902.

Wyoming State Medical Society.—The fifth annual meeting of this Society was held at Evanston, October 8 and 9, and the following officers were elected: President, Dr. G. G. Verbryck, Cambria; vice-presidents, Drs. F. H. Harrison, Evanston, W. C. Burk, Rock Springs, and W. A. Wyman, Cheyenne; secretary, Dr. C. H. Solier, Evanston; treasurer, Dr. J. L. Wicks, Evanston; delegate to the American Medical Association, Dr. R. Harvey Reed, Rock Springs; alternate, Dr. E. E. Lewis, Spring Valley. The next place of meeting was fixed for Cheyenne in joint session with the Rocky Mountain Interstate Medical Association.

Vermont State Medical Association.—The eighty-eighth annual meeting of this Association was held in Montpelier, October 10 and 11, and it was voted unanimously to reorganize on a basis of the county medical societies, that is, to establish in each county a society in affiliation with the State Association; a committee of three, consisting of Drs. D. C. Hawley, Burlington, J. M. Hamilton, Rutland, and W. D. Huntington, Rochester, was appointed to complete the organization throughout the state, and were empowered to employ one of their own number or any other member in good standing as organizer to visit the various counties. The following officers were elected for the coming year: President, Dr. J. B. Wheeler,

Burlington; vice-president, Dr. M. F. McGuire, Montpelier; secretary, Dr. G. H. Gorham, Bellows Falls, and treasurer, Dr. J. W. Avery, Proctor. Burlington was selected as the next place of meeting.

CINCINNATI ACADEMY OF MEDICINE.

Regular Meeting, Oct. 7, 1901.

President Dr. N. P. Dandridge in the Chair.

Discussion on Major Wm. O. Owen's Paper.

DR. P. S. CONNOR (medical member of the commission appointed by President McKinley to investigate the conduct of the Spanish-American War) opened the discussion on Major Wm. O. Owen's paper, "Preventable Disease in the Army of the United States; Cause, Effect and Remedy." He stated that many of the lessons which the Civil war had taught seemed to have been forgotten in the Spanish-American war. It was certainly possible to have prevented many of the diseases, particularly typhoid fever, but unfortunately preventive measures were not instituted in time. He stated that in many instances the seeds of typhoid fever were carried into the camps from the starting points of the troops, and that the soldiers were not infected so much from the camps established later. Then again crowd poisoning was a potent factor in breeding disease. A large part of the medical force was unfamiliar with military matters and camp sanitation. Sinks, in Camp Thomas, for instance, were not dug until ten days after the troops arrived, and when dug were soon allowed to fill up and overflow. Everything that was unsanitary, it seemed, existed at Camp Thomas. And what was true of this camp was true of many others to a greater or less degree. If troops could have been kept in small companies, thoroughly isolated and inspected regularly, nothing like the amount of sickness would have occurred. The morale of the camps was bad, and the country will suffer for many years from the results of the diseases engendered in these camps; pension grants will increase materially from year to year.

The responsibility for disease should be established, but as to how we are to get out of the existing difficulties he did not know. Reform should begin with the Medical Department, and not with a medical officer here and there. Medical officers have not enough authority. Give them authority along the lines of sanitation, inspection of troops, medical supplies, etc., and then hold them responsible for any dereliction of duty along these lines. Nothing in the way of reform can be accomplished unless the movement begins in the Medical Department of the army. Unquestionably the Medical Department should have its own transportation. Many times supplies arrived at their destination but could not be gotten out of the cars without orders; in other instances supplies that were started promptly on their way did not arrive at all. In conclusion, Mr. Connor said that everybody realized the necessity for radical changes in the Army Medical Department, but thought that nothing would ever be accomplished through resolutions passed by different medical societies throughout the country. It was unfortunately true that a word from one of the dozen prominent politicians who could be named would carry more weight and be more liable to accomplish results than the resolutions of all the medical societies of the country. Finally, considering all the circumstances connected with the Spanish-American war, it was wonderful that the Medical Department got along as well as it did, and that there were not more lives sacrificed.

DR. S. P. KRAMER (major and surgeon, U. S. Volunteers, Spanish-American war) stated that sufficient time had not elapsed since the war, for the people to calmly think over the lessons to be learned from experience. Many adverse criticisms had been made of the Medical Department, some of which were no doubt just, but it must be remembered that the causes leading to such criticism were and are just as rife in civil life as in the army. He had listened during the evening to a good deal of criticism of army regulations, but to him army regulations were a necessity, and red-tape an essential part of the system; the regulations of the United States Army were the compilation of the experiences of men who had seen years of service and were therefore fully competent to formulate plans for the guidance of the army. As in civil, so in army life, a great deal depends upon the individual. He himself had had no trouble in obtaining medical supplies, but he knew those who did, and in many such cases the fault was with the medical officer. Some of them wasted supplies; others did not go about obtaining them in the right way. The causation of typhoid fever was due to the unsanitary condition of the camps; the remedy for this was education along the line of sanitation, and if the laws of governing this branch of camp equipment should be violated the offender should be severely punished. He wished to offer the suggestion that many of the so-called laws of sanitary science were by no means thoroughly worked out, and that officers of the line could not be very severely blamed for not following what were to them, at the best, but theories. But he thought that such of the laws of the science as were known should be taught officers of the line at the military academy at West Point. He thought Major Owen was right in bringing this matter before the authorities, and likened him unto a wedge which would be considerably hammered and the edge taken off it, for his temerity in forcing these unwelcome truths upon the army. Contract surgeons, he said, occupied a very anomalous position; they have no responsibility; practically they can resign after giving two weeks' notice; they are exposed to all the risks a regularly appointed medical officer runs; they are not in the line of promotion, and they have not the authority of the regularly appointed medical officer, which is little enough, it is true. Under such disadvantages the service does not get the best there is in these men. In conclusion, Dr. Kramer stated that notwithstanding all the disadvantages under which the army corps labored, the mortality from typhoid fever was but little, if any, greater than that obtained in private practice or in the large public hospitals of civil practice.

DR. BYRON STANTON (late major and surgeon, U. S. Volunteers, 1861-65) said that the paper of Major Owen strongly impressed what has been often said, that it is not the carnage of battle, but the pestilence that lurks in the camps, that is most to be feared. It is a sad commentary on the management of our troops that so large a per cent. of the deaths should have been from typhoid fever, a disease more easily prevented than any other except smallpox. When nearly 22 per cent. of the soldiers, selected, as Dr. Owen has said, from among the flower of young American manhood, suffer from a preventable disease there must be something wrong with those in authority. I am sure that the figures given are not exaggerations. I believe it to be an underestimate, although coming from official sources. The investigations of the commission consisting of Drs. Walter Reed, E. O. Shakespere and Victor C. Vaughan, appointed to study the causes and spread of typhoid fever among the troops at various camps in the United States during the Spanish-American war, show that many of the cases returned under the head of diarrhea, continued fever and malaria, were undoubtedly cases of typhoid fever. The report of Dr. Vaughan, one of the commission, shows that more than 80 per cent. of the deaths from the Spanish-American war were from typhoid fever. That much of the mortality might have been prevented by means known to sanitarians, I fully believe. During the Civil war the per cent. of mortality from the preventable diseases was, no doubt, greater, but at that time much less was known about preventive medicine than was known in 1898 and 1899.

With the advance in sanitary knowledge greater responsibility rests upon those having charge of camps and troops. The application of knowledge now in possession of sanitarians has resulted in a marked diminution in the last decade in the mortality of cities and towns, amounting to 180 in 1,000,000 of population, as shown by the vital statistics published by the U. S. Census Bureau. The application of the same knowledge to camp sanitation would have resulted in a greater saving of life among the soldiers. By means known to sanitarians before the outbreak of the late war, the death-rate should have been greatly lessened. That knowledge was not possessed by other officers though known to and urged upon them by the Medical Corps of the Army, but with the indifference to advice

from medical sources, even in regard to medical matters, that is characteristic of the average commanding officer, the most threatening danger of camp-life—filth—was permitted to exist. Waste was not safely and duly disposed of, consequently there was contamination of water supplies, and the other known means of communicating typhoid fever were present. The spread of typhoid fever is generally attributed to the use of water contaminated by the feces of typhoid patients, and this is, no doubt, the chief cause of its spread, but it is not the only cause. Air-borne typhoid is of more common occurrence than has generally been supposed. This is especially true among soldiers. Other sources of infection than water contaminated with feces, are here more potent than in civil life. The dangers intensified by army life are as follows: Water contamination by the urine of typhoid patients, an undoubted source of danger; contamination of the camp with fecal matter, which permits the carriage of the bacillus by dust; the use of shallow, open sinks by typhoid patients without disinfection of the dejecta, which renders possible the carrying of contagion by flies, an often present and too much overlooked source of danger; hospital contagion, a danger greater than is generally supposed; the sleeping of the ambulant cases in the company tents, through which the bedding, clothing and tentage become contaminated; the use of the same cups and utensils, and lack of cleanliness on the part of cooks. That there are other means of communicating typhoid fever than by the use of polluted water is shown by the result of moving a camp, the water supply remaining the same. A change of camp site, even for a short distance, is followed by a diminution of disease, especially typhoid.

The position taken by Major Owen is the correct one. Sanitary matters should be under the care of the medical officer. The prevention of disease is his first care. He can best make use of sanitary knowledge. The means for the prevention of disease are best known to him. Medical officers have a greater knowledge of all matters relating to camp and personal hygiene, and much should be entrusted to their care in the selection and maintenance of camps, except where the exigencies of war may prescribe the location of the troops. More of preventive medicine should be taught the medical officer and then much more should be required of him. He should be given more authority. To him should be entrusted the prevention or removal of all sources of camp pollution. Filth is a most threatening danger. The health of the army depends largely upon cleanliness, and the success of the campaign may depend upon the health and well-being of the troops. Sickness reduces the strength of an army not only by the loss of those who are sick, but by the detail for hospital duty. Aye, even more than this, the depressing influence of the presence of sickness affects the zeal, spirit and confidence of an army. Even those who are not sick are less efficient as soldiers. The medical officers whose duty it is "to investigate the sanitary condition of the post or command" should have something more than the mere privilege of making recommendations that they have no power to carry out—recommendations that the commanding officer, too often uninformed upon sanitary matters, may accept or reject. It is generally the latter, as instanced in the paper of Major Owen, which I most cordially commend.

DR. EDWIN RICKETTS said that in no sense can it be claimed that this paper was a political move. It is to be commended for its teeming facts as to superior line officers' vested authority in matters that should be referred to the army surgeon, as superior medical authority, for advice before final decision. It steps forward and into bold relief and deserves much consideration by way of emphasis. It calls "attention" in no uncertain sound to the importance of preventive medicine in selecting army camp sites and in timely changing them, so soon as the army surgeon, who should be referee, sees the necessity of so doing, except when the camp site is held as a military necessity. Then the army surgeon should waive all other considerations. It is shown how much more deadly were the germs of typhoid fever and dysentery in the camps located in the United States, on account of lack of hygienic considerations, than were the bullets of an opposing army in the enemy's country, there being 3116 deaths from preventable diseases, as compared with 1070 for homicide, suicide and gunshot wounds. The cross-road physician would feel himself disgraced and with a ruined professional reputation if he had a mortality following his treatment of typhoid fever that came anywhere near this. The deplorably high mortality in typhoid fever and dysentery can not in justice be laid at the door of the army surgeon. Their results in treatment show a mortality of 7.60 per cent. of all cases. This mortality represents 86.24 per cent. of the total mortality of all diseases. The pleadings of the medical officers with their superiors of the line for a change in camp site were in vain. For these pleadings and suggestions they were to be chagrined and humiliated on account of the lack of consideration that should have been extended them. The fault of this lies within our own ranks, for we lack independence, dignity and determination in not demanding and seeing that we have extended to our profession due respect and due consideration for the services rendered to the service of the United States. Major Owen has proven to us fully the courage of his convictions and the cause for the faith that is in him, instead of remaining in the usual subordinate, submissive quietude of the average army surgeon. It has been wisely arranged by our government that any soldier, as soon as he is found to be suffering from tubercular infection, should be promptly isolated by being taken to one of the national farms for tuberculosis. These farms are especially located for the arrest and possible cure of the disease. On the other hand, the poor and unfortunate typhoid fever patient has been kept within an already infected hospital camp. It was safer to have been a private in the charge on San Juan Hill than to have been in Camp Meade, Camp Alger, Camp Thomas or even Camp Merritt, California. With the amended bill as suggested by Major Owen for presentation to Congress, could the tears of the 3116 mothers and those of the relatives and friends, be presented, I am sure it would have a hearing. Could the 3116 men have had the opportunity, they would have gladly and gallantly responded to the bugle's blast, calling them to the charge, even though every life of them had to be sacrificed. They would have accepted the inevitable as thousands of American soldiers have already done. The 3116 deaths from typhoid were from sanitary neglect. It was not excusable. It can not be condoned, for there was no enemy to fight, no enemy within a thousand miles. There could have been no military necessity in these places of assembly and instruction.

DR. FRANK W. HENDLEY (Late Surgeon and Major Ohio Volunteer Infantry), said that his observation, based upon acquaintance and conversation with a considerable number of surgeons of the army, was that they do not so much desire increased rank or pay as authority and power to enforce sanitary and hygienic measures. The possession of such authority and power would necessarily include the exclusive control of all property, and transportation of all hospitals, hospital corps, ambulance companies and other subdivisions of the medical service. The present status of the medical officer is well-nigh intolerable. As he can only recommend or make request, his efficiency depends upon the complacency of the line officer with whom he is associated. The medical officer may recognize a certain source of danger to the command and recommend certain action to obviate it, but unless the line officer in command concurs and acts in accordance with the recommendation the surgeon can do nothing except wait for the disaster that is to come and then cheerfully go to work to repair the damage.

At the outbreak of the Spanish-American war it was well known that smallpox existed in Cuba, where the troops were expected to operate; consequently the surgeons in all the regiments in Ohio and probably in all others, recommended vaccination during the period of mobilization, in order that the wounded arms might heal before the active camp life commenced. Fortunately, we had a colonel who recognized the propriety of the recommendation and concurred heartily, even going so far as to punish severely half a dozen men who refused to comply with the order; but one Ohio colonel assumed to know more on the subject of vaccination than his surgeon, and refused to issue an order requiring the operation, saying that he did not believe in vaccination. When this regiment reached the South, however, the dictum of the colonel was overruled

by higher authority, and the three medical officers were compelled to vaccinate their eleven hundred men under the added disadvantages of the crowded tent life, in the heat and dust of the southern camp, and during the work and constant drills which were necessary there; consequently the cleanliness, asepsis, and the rest for the affected arms which was desirable, could not be obtained, and infected arms were very numerous, thus throwing much unnecessary additional work upon the surgeons, delaying the efficiency of the regiment, and, I doubt not, laying the foundations for numerous pension claims. Many such instances might be narrated of arbitrary overruling of medical recommendations with unfortunate results, but time does not permit. Medical officers protested against the location of certain camps and the continued occupation of the same site for lengthened periods, calling attention to the fact that all authorities fix the limit of safety for continuous occupation at two weeks, but their protests and recommendations were frequently endorsed, "not concurred in," and the world knows the results that followed at Chickamauga, Tampa, Tampa Heights, and elsewhere. Colonel J. D. Griffiths, Chief Surgeon 3d Division First Army Corps at Chickamauga, says, "Our Medical Department should be divorced from the Quartermaster's Department. As a matter of fact the Quartermaster's Department is largely at fault for much of the trouble, and, while satisfactory for a small army in time of peace, when built upon and expanded as required for an army ten times as large, it failed absolutely and went to pieces. During the hot summer months 75 per cent. of the command still wore the heavy woolen clothing. Insufficient tentage was issued, resulting in overcrowding and this was a cause of much of the subsequent sickness." To these remarks I would add that during the first few weeks it was impossible to secure lumber for tent floors, such requisitions being always disapproved, and as for the tent crowding it was frightful at all times. Many of our men were still in the little shelter tents, well named "pup-tents" by them, all through the rainy season at Port Tampa City. Not until August could tent floors be obtained by our regiment. Requests for disinfectants were met by harsh instructions to read the Regulations, which provide as follows: "The routine use of disinfectants is prohibited." Later when public indignation was aroused against the conditions prevailing, all these supplies were issued freely; but at that time it was like locking the stable door after the horse had been stolen. When at Columbus and still under state control, a liberal supply of chlorid of lime was supplied and used in the sinks; but as soon as we were mustered into the service of the United States, this stopped instantly, because, under the Army Regulations, we were required to cover the contents of the sinks three times daily with dry earth, notwithstanding the fact that at that time it was raining every day, the camp was a sea of mud most of the time, and the sinks half full of water. Surgeon-General Sternberg himself, in his Presidential Address before the Association of Military Surgeons of the United States, in 1895, after commenting upon the mortality during the Civil war, predicted that the sickness and mortality from typhoid fever, dysentery and traumatic infectious diseases would be much less in any future war, but made an important qualification of his prediction as follows: "The extent to which this may be accomplished will depend upon the preparations we make in advance and upon the success we have in obtaining the intelligent cooperation of officers in command of troops in carrying out the recommendations we may make."

On the subject of control of all property and transportation, the defects in the present system are most conspicuous, and Major Owen is undoubtedly right when he calls attention to the complications that might arise under the provisions of the Geneva Convention. The distinction between the European and the American meaning of the word "ambulance" must be carefully borne in mind. In our country it means simply the ambulance wagon, whilst abroad it means the entire field hospital. In our army, under the present system, nothing is exempt from capture except the ambulance wagons, the sick men and their medicines, in addition to the surgeons, hospital corps and nurses. The enemy may legally take the tents over their heads, the cots on which they lie, their food and clothing, their cooking outfit, their wagons, horses, mules, and practically all the hospital supplies, except the medicines and ambulance wagons. And all this simply because tentage, cots, wagons, etc., belong to the Quartermaster's Department and nothing of the Quartermaster's property comes under the provisions of the Geneva Convention. The Hospital Department occupies a position of dependency upon the Quartermaster's Department for absolute necessities. Ordinarily these are supplied freely, but just when they will be most urgently needed, then the Quartermaster will be unable to supply them, and there lies the fatal error of the situation. Just at the time when the surgeon may be asking the Quartermaster to give him more tentage, wagons and mules, the Quartermaster, in the exigencies of the occasion, may feel it necessary for the public service to take away what he has already given. If ammunition and other supplies are needed at the front, the Quartermaster will certainly keep his wagons for that purpose or hold the tents to keep supplies in, rather than issue them to the Hospital Department. The preservation of the fighting line will be considered as of more importance than the comfort of the sick. Over in the Philippines the captain of a company marching all day in the rain reprimanded his men when he found they were covering their shoulders with the flannel cloth given them to cover their rifle locks, saying, "keep your rifles dry, the government can get plenty more men in your places, but it can not get Krag rifles in the place of those you spoil here." How many times has it occurred that when the surgeon asked for wagons to haul ice or water for the hospital, he was told by the Quartermaster that all the wagons were engaged in hauling wood! General Sternberg had his supplies ready at Tampa, but under the Regulations he had to depend upon another department for their transportation to Cuba and that transportation he could not get. If General Sternberg had possessed his own means of transportation for his department Clara Barton could not have made the observation she did. Under present conditions if we go to war again, the sad experiences of the Civil war and of the Spanish-American war, the needless suffering and want endured by the sick and wounded, will be repeated and we will have to depend on outside volunteer relief organizations to do the work that the regular Medical Department could and would do if their hands were not tied.

The system is faulty, therefore the results must be bad. It will never do to depend on volunteer civil organizations to do permanent work in a military campaign. The Sanitary Commission did noble work during the Civil war, but that was a generation ago before our knowledge was in any degree perfected. The National Red Cross helped very much during the Spanish-American war, but their aid should have been unnecessary. Their hospital ship was the first vessel to sail into Santiago harbor and its cargo was a literal godsend to the people there. During the Franco-Prussian war the French Red Cross Society undertook to care for the sick and wounded of the army and established numerous ambulances as field hospitals, but those in charge were compelled to admit the system was incorrect. One says: "The sanitary service of the army should have an organization wholly military and in no way civil, especially on the battlefield;" another says, "There can be no place in any well-regulated army for a volunteer health service." If my information is correct, France has recently made the Medical Department of her army an independent, autonomous department well organized for effective service. Our Medical Department should be so complete that outside interference, well meant as assistance, but nevertheless an intermeddling which causes confusion, will not be necessary and therefore will not present itself. Dr. Tripler, in commenting on some of the difficulties arising during the Civil war, says: "Certain persons suddenly smitten with a more intricate knowledge and thorough perception of the duties and administration of the Medical Department than I had been able to acquire in thirty years of experience and study, obtruded their crude suggestions, marring where they could not make, and paralyzing where they attempted to quicken, succeeded by their uninformed zeal. They, inno-

cently enough, perhaps, but none the less unfortunately enough, succeeded in defeating the measures I had much at heart, had carefully contemplated and intended to carry into effect at the proper time." Not only is this outside interference often irritating, troublesome and non-effective for real good, but it certainly is humiliating for a great nation to be obliged to depend on aid societies and charitable persons for ice and other necessary medical supplies. There will always be ample room for the charitable organizations to do good work in the large base hospitals and among the sick and wounded sent to their homes, but in the field hospitals and in the regimental dispensaries the Medical Department should have the exclusive management of affairs.

By the establishment of the Army Medical School and the Naval Medical School, facilities were provided for the complete training of medical officers for their special work; thus by the creation and excellent development of the Hospital Corps, the Medical Department secured a permanent body of trained, intelligent helpers under its exclusive control, and finally, by the adoption of the trained female nurse system, it perfected and completed its facilities to care for the sick so far as the personnel of the working force was concerned. If now the defects pointed out by Major Owen can be remedied, we shall have a Medical Department which will be a model for the nations of the world.

Now just a few words upon the relation of this subject to the National Guard and the State Medical Department. The nation must, of course, depend upon the National Guard to swell the army to effective strength in time of war and will always be the training school of popular military knowledge. In order that the transfer from state to federal control may take place promptly and easily, the National Guard in its organization, equipment, discipline and instruction must be identical, as near as possible, with the regular establishment. The physical examination of recruits must be thorough and rigid, based closely upon the rules laid down in Tripler's Manual. The Medical Department must be removed from the influence of politics or personal favoritism, and detached from local regimental control. That is, medical officers must be members of the state medical department instead of mere regimental staff officers. They must be appointed only after rigid technical examinations before a board of medical officers, re-examined after three years' service for promotion to captaincy, then again examined at the end of five years for promotion to surgeon-major, provided a vacancy exists. The hospital corps likewise should be enlisted as members of a state hospital corps under exclusive control of the Medical Department. The hospital stewards should begin as acting stewards and secure promotion by examination after one year, the same as in the army. The matter of detailing surgeons, assistant surgeons, stewards, and hospital corps men to serve with the various regiments should be very simple. The above plan is in operation in the states of Minnesota, New Jersey and Massachusetts, so far as state laws permit, and it is found to work in a satisfactory manner. What is urgently needed is uniformity in all the states, and this can only be secured by enactment at Washington of laws that will make the National Guard a secondary or reserve part of the army, thus insuring thorough military control and thorough inspections with power to weed out triflers and incompetents and to build up an effective organization that will stand ready to march at short notice from the local armories direct to the field of operation.

But coming back to the Medical Department: with the organization I have suggested and the use in that organization of all blanks, forms, reports, requisitions, etc., precisely as used in the army Medical Department, substituting only the name of the state in place of that of the United States, and with medical supplies of the same nature, obtained and expended under the same regulations, the terrible bugbear of "paper work" will not be a burden and "red-tape" will not be complained of when the guard is suddenly called to active duty, because the forms will be familiar and the great benefits of the much-dreaded red-tape will be known and appreciated. With medical officers and stewards thus made familiar with the forms of paper-work and the details of Regulations, the Volunteer Medical Officers will be ready to at once work hand in hand with their brethren of the regular service and would cease to merit the title of "fool volunteer."

DR. CHARLES H. CASTLE (Late Captain and Assistant Surgeon First Ohio Volunteer Cavalry, Spanish-American war) said: An experience of some seven months with our army hospitals in the field leads me to unqualifiedly endorse Major Owen's demand that the Medical Department shall be taken from its present absurd and disgraceful dependence upon other departments for its supplies and transportation. There is a publication issued by the government called the United States Army Regulations, and during my first two months in the service I studied this assiduously, but notwithstanding the study I do not think that the full hideousness of its absurdity struck me until one day the ordinance officer, mind you, the man who deals in ponderous death-dealing weapons—in shot and shell and tons of smokeless powder, and in seige trains miles long—came around and gave me a knife and fork and spoon and made me receipt for them!

Major Owen refers in particular to the conditions in the large camp at Chickamauga. Thanks to the liberality of the State of Ohio and some personal friends of the regiment, and thanks also to the fact that we were camped on a sunny plain with good natural drainage, the First Ohio Volunteer Cavalry to which I was attached was almost independent of the government it was serving, in the matter of medical and surgical supplies; as late as the month of June, three months after the regular forces had established themselves in this camp, our regimental hospital had to lend to the headquarters hospital of the Commanding Major-General, mentioned in Major Owen's paper, the necessary surgical dressings for an operation for extirpation of the inguinal glands! The only possible way of accounting for this dearth was that the Medical Department had to depend upon the Quartermaster's Department for transportation, and that department had its mind and its box-cars filled with uniforms, and boots and shoes and tents. Speaking of tents allows me to record the manner in which the Medical Department of the United States Army sometimes gets tents for its typhoid fever patients—and sometimes does not. You will perhaps pardon me for quoting from the medical history of the First Ohio Cavalry which I had the honor to read before you some two years ago. During the first ten days at Camp George H. Thomas, the medical officers of the regiment had two difficulties to contend with; one was the delay in furnishing the troops with fresh beef, keeping them on the travel ration known among the soldiers as "canned giraffe" because it seemed to be all neck, until their hitherto untried digestions were thoroughly upset; and the second was the difficulty in procuring hospital tents. The two medical officers were each entitled to a wall tent, but for the sake of the sick we were obliged to bunk together and give up one of our 8x10 tents as a hospital. Repeated requisitions made by Major Bunts failed of response, until one of our majors of the line, an ex-officer of the regular artillery, discovered that he had in the chief quartermaster an old friend, and his personal solicitation accomplished promptly what a requisition "through the regular military channels" was powerless to effect. Two hospital tents were therefore given to us, and never, from that time, the last week in May, until the 20th of September, when I turned them over to the Depot Quartermaster at Tampa, failed to leak whenever it chanced to rain. These tents were inspected at least once at Chickamauga, and condemned, but were never replaced.

The regiment had left Chickamauga just as the violent epidemic of typhoid had begun there, and had proceeded as ordered, to Lakeland, Fla. For the ten days following our arrival at Lakeland we received our daily addition of cases of typhoid, all cases dating back to Chickamauga, and the additions ceasing as we reached the limits for the period of incubation. Thus on the 18th we received 2, on the 19th 2, on the 20th 2, on the 22d 3, on the 23d 2, on the 24th 1, on the 25th 2, and on the 26th 2. By July 22 we had 12 in the hospital, just filling it; by the 23d we had 14 in hospital, overfilling it. The hospital was cleared of all cases but typhoid,

for we knew of typhoids in quarters that needed attention. Requisitions were made on the Quartermaster's Depot at Tampa, and after a delay of a week, we received one more tent. So that on July 27, when, we may say, we harvested the entire crop of the Chickamauga epidemic that we had brought with us, we had 18 in hospital, filling it, and 34 in quarters, 12 of which latter were typhoid. Being in quarters means lying on the sand floor of a tent, with one blanket under you, and one blanket over you, not at all a bad bed in summertime; but it also means getting up and going to the cook tent every time you want a drink of water, and walking one or two hundred yards outside the confines of camp every time you have one of those frequent typhoid stools, and it became my melancholy duty to make a postmortem examination of a private in the First United States Cavalry—our neighbors—who died of exhaustion from this cause. Early one hot, damp morning this patient walked from his quarters to the sink and back again, laid down, and died an absolutely unnecessary death. The postmortem showed the characteristic lesions of typhoid fever in the second week occurring in a man previously suffering from marked inanition.

About this time there came to us, on behalf of the Army and Navy League of Cincinnati, a lady of education, refinement and tact, and one absolutely devoid of the hysteria that unfortunately afflicted so many of the ordinary camp visitors; she was full of sound common sense that she had gathered in sojournings in various parts of the world. This personal inspection on the part of the Army and Navy League made it the most valuable agency of the kind that I know of, not excepting the Red Cross Society. The camps of the brigade were inspected and the situation discussed, and the need of tents, cots, hospital furnishings, milk, eggs, etc., were acknowledged. Hospital tents had been requisitioned for by Major Bunts, but could not be had, as the Quartermaster at Tampa asserted that all available tents had been given to the new West Tampa Fever Hospital and to the depots at Fernandina; cots could not be had presumably for the same reason, and the limited supply of cots in the village of Lakeland had been exhausted; milk and eggs were being bought by the money supplied by Cleveland friends of the regiment. This business-like angel of the Army and Navy League went to Tampa, obtained an interview with the Quartermaster, and a promise of the necessary tents—the second time in our short military history where an unofficial interview of an outsider accomplished promptly what the requisition "through regular military channels" had totally failed to do. I met the lady the next day in Tampa. We went together to the Quartermaster's office. I stated my errand to the assistant temporarily in charge—the procuring of hospital tents. He politely refused my request on the grounds that he had none. I represented the urgency of the case, the large number of our sick, and the character of their illness. Still a refusal. Then the lady interposed; she announced the promise made by his chief the day before, and the gallant assistant went to the telephone, called up the Quartermaster's Depot, asked how many hospital tents they had, and directed that four be sent at once to the First Ohio Cavalry at Lakewood.

Having seen, now, how the Quartermaster's Department aids the medical officer in his daily visits to the sick, let us see how another department discharged its duties toward the dependent Medical Department. The methods of feeding the sick in the hospitals of the armies of the United States are practically as follows: When a soldier is sick or wounded and is transfered to a hospital, the Commissary Department subtracts his rations from the total amount going to his company, troop or battery and is supposed to send the ration to the hospital in which the soldier lies; and as even the United States Government knows that sick men frequently need dissimilar food from well men, provision is made that at the request of the surgeon in charge, the Commissary Department shall buy this ration from the hospital, or, in other words, shall furnish money at the rate approximately of seventeen or eighteen cents a meal, so that sowbelly, onions, hard tack, and coffee can give way to milk and eggs. Notwithstanding this express provision of the Army Regulations, the Chief Quartermaster at Camp Thomas, Chickamauga Park, Ga., flatly refused to purchase these savings made by our hospital, though frequently requested to do so by Surgeon-Major Bunts through our regimental commissary. I do not know his excuse. The better his excuse the more is exhibited the inherent viciousness of this detestable system. Our sick men were fed milk and eggs by the women of Chattanooga, and every morning our ambulance could be seen along with a long line of other medical mendicants outside the door of their commissary depot, where they were performing the functions abandoned by the men of the War Department of the United States. That this most peculiar and roundabout method of supplying hospitals with food has its disadvantages, to say the least, was illustrated again in our hospital at Lakeland, Fla., when the Second Provisional Cavalry Brigade of the Fourth Army Corps moved north and left me under the pines of Florida with seventy sick men in bed. The brigade commissary did all he could for me; he directed the commissary officer to leave rations with me for thirty days for the whole number of sick. These hideous things could not be eaten by typhoid fever patients and must be sold to purchase milk; but every commissary sergeant in the brigade had been trading sowbelly, coffee, flour and baking powder to the neighboring "crackers" for fresh vegetables for six weeks past, and when I came to sell I found the market overstocked and prices ruinously low. During our mad quest for purchasers almost all of our perishable articles, like potatoes, onions, hard-tack, etc., spoiled, for they had no shelter, so that our total realization from these rations was not enough to keep our hospital going one week. It is true that an order was promulgated from the Adjutant-General's office on Aug. 15, 1898, allowing to the hospitals from the funds of the Commissary Department, sixty cents a day per patient. As soon as I discovered this I made application for the allowance. In the interval before its receipt, Dr. Partello, the resident agent of the Red Cross Society at Tampa, visited me and when I told him that I had made application for the sixty cents per day, he deplored the fact, told me that I had better not accept it when it came, and that it would be an almost endless source of annoyance and confusion to me. I regret to be compelled to state that the predictions of the good Doctor have been fully verified. They compelled me to pay back out of the sixty cents the full value of all the rations that had spoiled or been sold at nominal prices, so that really the net result of my application was abundant correspondence, voluminous reports, severe aggravation of the surgeon, and unabated, unappeased hunger of the typhoid convalescents. The regular medical officer in charge of the West Tampa Fever Hospital, having had seven years' experience of Departmental methods, exhibited a degree of skill and tact in his managment of this matter worthy of all admiration. He drew his sixty cents per diem for his patient and lodged it safely in the bank, so that he could say to any inquiring newspaper man or anxious camp visitor: "See, I am abundantly supplied with funds," but as he continued courteously and gratefully to allow the Red Cross Society to purchase all his food and other necessities, his final reports consisted merely in handing the Government money back again practically untouched; and he had gratified the charitable contributors to the Red Cross fund in the knowledge that it was their ministrations that kept his mortality down to 5 per cent.!

The first disease that enters a military camp is diarrhea; in the midst of a campaign, whether the business in hand be fighting, or seige, or only garrison duty, the diarrheal diseases absorb by far the greatest number of "sick and wounded." The story is the same whether the campaign be a tropical one like ours in Cuba, or amidst the ice and snows that confronted the allied armies of the Crimea. Macleod says of the terrible winter of 1854-1855, that the percentage of sick in eight army corps was 73 per cent., and on another page his figures show that 66 per cent. of the sick had typhoid fever. It is then but reasonable to demand that the medical officer, the sanitarium, should designate what food should be furnished to troops, and that he should have a chance to inspect this food before it reaches the hands of the regimental commissary. At this

latter point it is often too late to prevent harm being done. I have frequently had to condemn food in a troop kitchen right under the eyes of hungry soldiers, who, I was sure, felt no gratitude whatever as the poisons were removed, as there was practically very little else that was palatable left to eat. Digestive disorders, then, as we see, sometimes deprive a commanding officer of one-half of the men sent to him by his government as fighting men. Improper food is in nine cases out of ten the cause of digestive disturbances. Should no one else approve, the commanding general should be grateful if the medical man should step in and by a proper supervision of the food supply, keep to the fighting line at least ten, twenty, or thirty more men in every hundred. It is not difficult to fix the status of the beef that was issued as a factor in this indigestion. We never saw any of the canned roast beef that has produced such a controversy. None was ever issued to the regiment at Chickamauga, and at Lakeland our Commissary heard so many complaints of it from the regulars who were our neighbors, that he refused to touch it and always demanded as the meat of his travel ration the canned corn beef or "canned giraffe." As for the refrigerated beef, it was very difficult to keep, and decomposition with the formation of ptomaines sometimes took place in an hour or so; I have condemned in a cook tent at noon, beef that had passed inspection at 10:30 or 11 a. m. I condemned several tons of this refrigerated beef at Lakeland.

The soldier of the republic must not be regarded only in the light as of food for powder. He is not a conscript, but voluntarily puts on a uniform which he has a right to expect will secure to him all the efficiency possible in fighting his country's enemies, and when that duty is over, if unwounded, he should return to his productive activities a healthy man. Suggestions for specific remedies must come from the experts; the medical officers of the regular service are the only ones who are well enough acquainted with the conditions both as they exist and as they should be, to be able to formulate proper plans. We know now that in at least one of our wars, the Spanish-American war, the medical officer had more work to do, and, considering his shamefully inadequate means, did it better than any other officer in the service, not even excepting the innumerable heroes of San Juan Hill. And one other thing: we know that the war against the Spaniard was a puny, miserable affair in comparison with our war against typhoid; for in this latter, those who should have been our allies aided the enemy. There are perhaps two other considerations that should claim our attention, though they may not bear directly upon Major Owen's contention. The first is that while the army Medical Department should be absolutely relieved from its present crippling dependence upon an overburdened Quartermaster's Department and from the Commissary Department, it should at the same time set its own officers free from a childish dependence upon their chief at Washington.

Finally, the strength of a chain is only the strength of its weakest link, and one of the links of the chain we are considering is the private soldier. The private soldier is usually a very verdant individual and in the calf stage of existence. He will go without camp bounds and drink of forbidden water and eat of forbidden and monstrous thinks sold by hucksters, and now that the canteen is abolished, he will get out of the garrison and drink of vile and forbidden whiskey. The private soldier does not know, and I have never heard that any provision has been made to instruct him, until after he gets sick, when his surgeon has the opportunity to give him some bedside instructions. When I was in service, the commanding officer of our regiment requested the medical officers to deliver occasional lectures at the daily Officers' and Non-Commissioned Officers' School, and I do not know of even this being done in any of the organizations camped in our neighborhood. These instructions should be extended to all and should be held to be an extremely important part of the schooling of the soldier, especially when we know that in all armies in all times, more men have perished from disease than from wounds. In fact, the saying of the old prophet that "they who take the sword shall perish by the sword" never has been correct; and the proper rendering of that biblical verse should be "they who take the sword shall perish by diarrhea." This is true, but it is not creditable to the American people and the twentieth century, and it probably can be stopped, but only in the way which Major Owen's paper indicates.

DR. W. O. OWEN (Major and Surgeon, United States Army) in closing the discussion, said: That which I tell you is no new story, for Irving C. Rosse said some years ago, "If the army medical officer were so fully aware of the importance of prevailing disease and the efficacy of judicious sanitary measures in their prevention, how does it happen that a state of affairs so completely opposed to the first principles of hygiene has been permitted to exist? An answer to this question is found in the unsettled relations existing between the military and medical authorities. In former days the military authorities held that the duties of a medical officer were to treat the sick and wounded, and any recommendations bearing on the general management of the men were deemed intrusive and resented as an interference with the province of the commanding officer. 'Medical opinions are very good when called for' was said to the senior medical officer in the Burmese war; and in the Crimean war, Inspector-General Alexander was informed by a general of division that he 'had better keep his suggestions and strictures until asked for.' It was not within the power of the medical officer, as at the present day, to remedy such evils, and if the suggestions were acted upon at all, it was owing to the common sense or the good feeling of the Commanding Officer."

The above is a very bitter statement of a truth existing in the past. That such a condition can exist may to-day be questioned. Yet a friend of mine, a gentleman who was born in the city of Cincinnati and is a friend of many present, informed me that in 1898 he reported to the general in command of the camp in which he was on duty that the camp was in bad condition and that an epidemic of typhoid was threatening. The answer that he received was an order to leave the general's tent and not to return to it unless he was sent for. How well the medical officer was listened to in the Crimean war is shown by the fact that many regiments lost over 10 per cent. of their strength, some 45 per cent., some 75 per cent., and one lost more than its average strength. It was in this war that the inspector-general was told that he "had better keep his suggestions and strictures until called for." It was in this same war that 20,000 pounds of lime juice were held for future use while scurvy was disabling the entire force.

It is not my idea to attack any man for the past, but to tell of the past that we may be enabled to see more clearly what is needed in order that we may be able to so draw a law that the responsibility may be fixed definitely on some one man, so that he may suffer for his carelessness, or that he may be removed for his lack of ability to control matters which he has been appointed to superintend. Have a law so drawn that it fixes definitely the responsibility. The bill I offer will do this, for the sixth paragraph puts in the hands of the Secretary of War to say when and under what conditions the line can take away from the Medical Department the responsibilities placed upon them by this bill. I have offered this only as a thought in the right direction; if any one will better it, I shall be grateful. My belief is that the line should at all times have the right to take upon their shoulders an absolute disregard for all sanitary law, but that when they do, that they should do so with a direct personal responsibility under the law for the accuracy of judgment used as shown by the results attained. I can not think that men should be subjected to unsanitary conditions in camps of assembly, in camps of instruction, or in war time when the approach of the enemy is not to be dreaded. Sanitary dangers like all other dangers must be taken, when in the opinion of the man in command it is necessary to do so for the general good.

I desire to call attention to General Orders 100, 1863, the last part of 116 says, "An honorable belligerent allows himself to be guided by flags or signals of protection as much as the contingencies and the necessities of the fight will permit.

117: It is justly considered an act of bad faith, or infamy or fiendishness, to deceive the enemy by flags of protection. Such act of bad faith may be good cause for refusing to respect such flags." The above was taken from the Army Regulations published the year before the United States became a party to the Geneva Convention. Yet, with a feeling of this sort published to the world, the hospitals do not have their own transportation. The United States, in the face of the Geneva Convention, still supplies the Medical Department with Quartermaster's transportation, tentage, etc., all because of the mistranslation of the French word "ambulance." The French regulation designates what constitutes an ambulance, giving the allowance of men, wagons, etc., which each class of ambulance shall have. Thus it is that the medical officer flying the Red Cross flag of the Geneva deceives the enemy, for the enemy does not know that all of these tents, wagons, horses, etc., which go to form an ambulance in the United States Army belong to the fighting force and that the fighting force is obligated, when their needs require, to take this material from the ambulances for their own use. They have the right to compel the Medical Department to again receive this property and again protect it from capture by flying over it the Red Cross flag of the Geneva Convention, when their necessity has passed. And hence it is that I have said that the Red Cross flag is a menace to the medical officer flying it over Quartermaster's property, which constitutes so large and important part of the ambulance or flying hospital of the United States Army.

So often has the thought been repeated to me that I am advocating a double-headed command, that I again feel called upon to state that I have insisted and still insist that the command continue to rest in the line where it belongs. I do, however, advocate that the Medical Department shall be made responsible for the sanitary condition of the army, and that penalties be attached for failure to avoid unsanitary conditions; that the right shall rest at all times in the line of the army to take this responsibility from the shoulders of the Medical Department to their own, taking with the responsibilities the penalties provided; that a full justification for their action shall always be the presence of the enemy and the dictation of military necessity.

DR. J. C. OLIVER moved that a copy of Mr. Hay's bill be sent to the Committee on National Regulation of the Ohio State Society with the endorsement of the Academy of Medicine of Cincinnati. Carried.

CALIFORNIA ACADEMY OF MEDICINE.

Regular Meeting, held at San Francisco, September 24.

Dr. D. W. Montgomery in the Chair.

DR. DUDLEY TAIT showed the necropsy specimens from a patient upon whom he had made a gastrostomy for cancer of the esophagus. The method employed (Poirier's operation) was briefly as follows: Incision through the rectus under local anesthesia; withdrawal of a cone of the muscular wall of the stomach and fixation of basis of the cone to the parietal peritoneum. A small opening is made at the summit of the cone, penetrating only the two outer layers of the stomach. This is easily done, for when the stomach wall is held between the thumb and index finger the mucous layer rolls away from the outer layer. The mucous layer is then pushed inwardly by blunt dissection, which is always bloodless. A small opening is made into the dome of mucous layer thus formed and a number fourteen or eighteen French catheter introduced. Stitching the edges of the outer cone to the skin, and closure of the remainder of the wall completes the operation, which seldom requires more than ten or fifteen minutes. The result in Dr. Tait's case was excellent; for eight months there was no leakage, and after that, leakage occurred only during intervals of gastric disturbances as manifested by hypersecretion and hyperacidity. The patient was able to take food—liquid and solid—by mouth shortly after the operation and continued doing so for four and a half months. Death from pulmonary congestion occurred thirteen months after the gastrostomy. The specimen showed the disappearance of everything resembling a canal. It is more than probable that this condition occurred early and that the continence was due to the folds of mucous membrane converging at the orifice in the stomach.

After having made seven gastrostomies by different methods, Dr. Tait gave preference to the valvular methods, among which he mentioned Fontan's and its modification by Poirier. Whatever be the method adopted the stomach opening must be very small, and in the majority of methods the tube should be introduced only at the time of feeding. Operation in two stages was dangerous as a long list of complications had demonstrated. Cocain anesthesia was a great improvement. Dr. Tait advised getting the patient up as early as the third day. Roux, of Lausanne, insisted strongly on this proposition in all of his cases of gastric surgery. The return of permeability of the esophagus after gastrostomy was due to the gradual disappearance of the fibro-stenotic process involving the tissues contiguous to the neoplasm. A similar condition was found in rectal growths after colostomy. Dr. Tait spoke briefly of experimental work he had done in view of permitting the patient to take food by the mouth in cases of stricture of the esophagus. The plan consisted in anastomosing the greater curvature of the stomach to a point on the esophagus situated above the stricture. He found that traction on the cardia invariably caused grave respiratory changes, although it was possible to dissect free and bring down a certain portion of the esophagus. Operation from behind was entirely unsuccessful.

DR. HOWARD MORROW presented a man with a sarcoma on his forehead. The growth began two years ago, in the skin, at the root of his nose and was removed by a paste. Two months ago it reappeared and now extends within a half inch of the inner canthus of the left eye. The entire growth is in the subcutaneous tissue and only adherent to the skin at the point of the former scar. The patient was brought before the Academy to get the opinion of the members in regard to the best means of treatment.

DR. H. M. SHERMAN said that he had never had to deal with a tumor of that character, in that location, but it did not seem to him that it would be difficult of removal as all the nodules were movable. It was possible that the growth was deeper than one would expect. He referred to the use of Coley's fluid in the treatment of such growths, and the recent publication of a paper by Coley, which cited a number of cases where satisfactory microscopic diagnoses were made, and under the use of the mixture the tumor disappeared. He thought we could not shrug our shoulders at a paper of that kind. Wyeth has stated that an incision could be made over the tumor and the tumor bathed in the fluid, but he thought it was best to remove these masses, and if some were found in front of the frontal sinus they still would be accessible for the use of Coley's fluid.

DR. H. A. L. RYFKOGEL said he had watched three cases where Coley's fluid had been used, but none of the cases were spindle-cell sarcomas. He thought it was advisable to use it for the prevention of recurrence.

DR. MORROW also presented a man with a chancre on the tip of his tongue, of two months' duration. One week ago a typical roseola appeared on his chest. This patient was presented on account of the unusual position of the primary sore.

DR. DUDLEY TAIT showed photographs of a case of Dupuytren's contraction, in which all the fingers of both hands were involved. The palmar retraction was both longitudinal and transverse and on the plantar surfaces there existed a slight degree of contraction. The latter feature, noted in two former cases, was considered sufficient to eliminate traumatism as an etiologic factor. The difference of opinion in regard to treatment of this lesion could be explained in part by the existence of three distinct stages or forms of the pathologic condition: in the first, the most frequent, the aponeurosis only is involved; in the second, the skin also; in the third, the joints in addition to the aponeurosis and skin. Dr. Tait had talked recently with several European surgeons in reference to the treatment of Dupuytren's contraction, and found most of them advising radical excision, followed by grafts, in the advanced forms. Multiple subcutaneous incisions, as advised by Sir Astley Cooper and subsequently by Adams, demanded long and painful

after-treatment and were frequently followed by recurrence. In the early stage, massage and constitutional treatment—for arthritism and diabetes—give excellent results in this lesion which belonged to the domain of medicine rather than to that of surgery.

Dr. G. Gross read a paper on "Intra-Muscular Mercurial Injections in the Treatment of Syphilis." After going into the history of this form of treatment, his paper took up the technic of the injections. He preferred calomel to other mercurial preparations, and used a glass syringe with a platinum-iridium needle 5 to 6 cm. long, which could be passed through the flame. The author claimed that the injections were not painful in themselves, but by the third day, very often, more or less severe pain and swelling was likely to develop. He thought that in order to pass judgment on this treatment, one must give it a fair trial, with fair warning to patient, and the splendid results obtained would convert those who would persevere.

Dr. G. Caglieri, in discussing Dr. Gross's paper, stated that he did not think the author had shown any advantage in this method, and he thought there were decided objections to it; he thought the injection always produced some pain, and sometimes violent pain. Six weeks ago a man came to him suffering from marked syphilitic manifestations, who had just given up treatment by another physician because he said he could not stand the pain of these intra-muscular injections. Other methods of treatment he thought were equally as good and not so painful. Of these the intra-venous injection method was probably the best. It was more soothing than the former and not such rigid care was required. He described the technic of the injection and claimed that they were very easy of execution. He used the 1 per cent. solution of cyanid of mercury in 20 m. doses daily for ten days, and then increased to a 2 per cent. solution, gradually lengthening the period between these injections until it is used once a week.

Dr. D. W. Montgomery said that he had but little experience with calomel injections, but that little had convinced him that bichlorid injections were not so painful. He did not think that unless the condition was ungovernable he would use calomel. He certainly would not use it in an ordinary case of syphilis, for one could get along very well with inunction or internal treatment. He had never used the cyanid of mercury.

Dr. Gross, in reply, said that he had made a number of intra-venous injections and had always found them painful. One advantage of the intra-muscular injection was that the effect was more lasting. Regarding the pain he said he had used the injections considerably and only remembered one case where the man did not come back. The method should be tried faithfully in order to prove its efficacy.

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment will be answered in these columns.]

Treatment of Cough and Pain in Tuberculosis.

The following is recommended in *Amer. Med.*:

R.	Aq. Aurantii flor.	℥iv	128
	Syr. chloralis		
	Syr. morphinæ, āā	℥i	32
	Aq. laurocerosi	℥iii	12

M. Sig.: One dessertspoonful every hour.

Catarrhal Conditions of the Female Genital Tract.

The following has been highly recommended as a very useful general application to the mucous surfaces:

R.	Ichthyol	℥i	4
	Acidi borici	℥ss	2
	Glycerini	℥i	32

M. Sig.: To be applied locally.

The surfaces having been thoroughly cleansed they should be painted with the foregoing preparation, and when the cervix is involved, a tampon saturated with this solution may be placed *in situ* and allowed to remain for fifteen or twenty hours.

Calcium Chlorid for Menorrhagia.

Lafond, according to the *New York Med. Jour.*, prescribes calcium chlorid in daily amounts of from 20 to 30 grains by the mouth, using the following:

R.	Calcii chloridi	gr. cxx	8	66
	Syrupi simplicis	℥ii	64	
	Aquæ	℥vi	192	

M. Sig.: One soupspoonful twice daily for eight days, beginning one week before the expected period.

M. Dalché recommends the following in the form of a pill:

R.	Ergotin	gr. iss		09
	Quininæ sulph.	gr. 1/3		02
	Pulv. digitalis	gr. 1/6		01
	Pulv. colæ q. s.			

M. Ft. pil. No. i. Sig.: Take one such pill three times a day, beginning three or four days previous to the period and continuing throughout the flow.

Treatment of Neurasthenia.

Lemoine, in *Bul. Gén. de Thér.*, recommends the use of sodium phosphate, administered subcutaneously, stating that it is of service in supplying the phosphoric acid lost by the nervous system. He prescribes it as follows:

R.	Sodii phosphatis	gr. xlv	3	
	Sodii chloridi	gr. xxx	2	
	Aq. destil.	℥iii	96	

M. Sig.: Inject 30 to 60 minims every other day.

Treatment of Gonorrhea.

As an injection the following is recommended:

R.	Bismuthi subgal.			
	Pulv. acaciæ, āā	℥ii	8	
	Aq. destil.	℥iii	96	

M. Sig.: Use as an injection every two hours.

The following is employed by Cabot:

R.	Plumbi acetatis			
	Acidi tannici			
	Zinci sulphatis			
	Cupri sulphatis, āā	gr. ii		12

M. Fiat tabella No. i. Sig.: Dissolve one such tablet in four ounces of water and use as an injection.

Treatment of Diabetic Pruritus Pudendi.

The physician should always look for diabetes, according to the *New York Med. Jour.*, whenever the pruritus is persistent and does not depend upon obvious local causes. In addition to the diet, if sugar is found in the urine, hot boric acid lotions are recommended:

R.	Acidi borici	℥iss	48	
	Sodii boratis	gr. lxxv	5	
	Aq. destil.	Oii	960	

M. Sig.: Apply locally as hot as can be borne.

Specific Iritis.

The following is recommended to be given internally in cases of syphilitic iritis:

R.	Hydrarg. biniodidi	gr. vi		36
	Potass. iodidi	℥iss	6	
	Aq. destil	℥ss	16	
	Syr. aurantii q. s. ad	℥iii	96	

M. Sig.: One teaspoonful three times a day after meals.

Treatment of Appendicitis.

Prof. Bourget, as noted in *Merck's Archives*, outlines the following treatment for appendicitis when once it becomes established: The patient is put on a plain diet, and one-half an ounce of castor oil with 15 grains of salacetol (a salicylic acid derivative) is administered daily. Lavage of the stomach and of the lower bowel is productive of good. A quart of water containing some antiseptic solution may be introduced into the rectum. From three to eight ounces of olive oil may

be injected with this enema. The author uses ichthyol in the above enema in the strength of 4 to 1000. The first two enemas ought to be expelled entirely soon after being injected; later a small quantity should be retained. The enemas may be given morning and evening. During the interval flaxseed poultices are to be supplied over the right iliac region, and if tumor is large five to six leeches are indicated. After two or three days of this treatment the castor oil is replaced by salines as follows:

R.	Sodii bicarb.	℥ss	2
	Sodii phos.	℥ss	2
	Sodii sulph.	℥ss	2
	Aquæ	Oi	192

M. Sig.: Five ounces three or four times a day.

Dr. Bourget is of the opinion that if the foregoing outline of treatment can be properly carried out that a good number of these cases of appendicitis would escape the surgeon's knife.

Treatment of Ulcers with Camphor.

Schulze, in *Clin. Moderna*, advises the following in the form of an ointment:

R.	Pulv. camphoræ	gr. xv	1
	Zinci oxidi	℥iiss	10
	Adipis	℥i	32

M. Sig.: Apply locally; or:

R.	Pulv. camphoræ	gr. xxx	2
	Zinci oxidi	℥i	32
	Olei olivæ	℥i	32

M. Ft. unguentum. Sig.: Shake and apply locally; renew three times a day.

Combination of Trional and Paraldehyde as a Hypnotic.

Rapiteau, as noted in *Amer. Med.*, has observed that the combination of trional and paraldehyde gives a new hypnotic which is four or five times more active than trional alone, and which may be employed for a great length of time without the fear of forming a habit or of cumulative effects. He recommends its administration according to the following formulæ: First make a normal solution of the two drugs as follows:

R.	Trional	gr. xv	1
	Paraldehyde	gr. xxx	2
	Olei amygdalis dulcis	℥ss	16

Mix the trional and paraldehyde, then add the oil and obtain a solution in a water bath.

As a draught:

R.	Sol. trional et paraldehyde (normal)	℥iss	48
	Mucilaginis	℥iii	96
	Syr. pruni virg.	℥ss	16

M. Sig.: One tablespoonful at bedtime in cases of insomnia. Each tablespoonful of the foregoing will contain 5 grains of sulphonal and 10 grains of paraldehyde.

The following is serviceable, to be given per rectum:

R.	Sol. trional et paraldehyde	3ii-iv	8-16
	Ovi vitelli uni		
	Lactis	℥ivss	144

M. Sig.: At one injection for an adult. In the form of a suppository:

R.	Trional	gr. iii	20
	Paraldehyde	gr. vi	40
	Ol. Theobromæ	3i	4

M. Ft. suppository No. i. Sig.: To be given at night for an adult. For a child these preparations may be given in the following proportions:

R.	Trional	gr. ¾	05
	Paraldehyde	gr. iss	09
	Ol. Theobromæ	gr. x	66

M. Ft. suppos. No. i. Sig.: At bedtime.

To be given in a capsule either to children or adults in the proper-sized doses, the following form of administration is recommended:

R.	Trional	gr. ¾	05
	Paraldehyde	gr. iss	09
	Ol. amyg. dulcis	gr. x	66

M. Ft. cap. No. i. Sig.: One capsule three to six times a day.

Current Medical Literature.

Titles marked with an asterisk (*) are noted below.

American Medicine (Philadelphia), October 12.

1 Uric Acid Fallacies. Frank Billings.
2 A Case of Anthrax of the Face; Operation; Recovery; With Exhibition of Patient. W. B. Platt and H. C. Ohle.
3 *The Diagnosis of Primary Laryngeal Tuberculosis. P. S. Donnellan.
4 Fibrin in the Blood. Robert L. Watkins.
5 *Kidney-Stone Diagnosis and Treatment. Donald Macrae, Jr.
6 A Fatal Case of Tetanus, Treated with Antitoxin. Louis C. Ager.
7 *The Lane Lectures on the Social Aspects of Dermatology. Malcolm Morris.

Medical News (N. Y.), October 12.

8 The Endowment of Medicine. Malcolm Morris.
9 *The Influence of the Colorado Climate upon Pulmonary Hemorrhages. S. G. Bonney.
10 *The Tuberculosis Question. H. Arrowsmith.
11 The Prevalence and Treatment of Tuberculosis Among the Poor. H. L. Fancher.
12 *The Crowding of Consumptives into the Municipal General Hospitals. Wm. Ridgely Stone.
13 Tuberculous Otitis Media, Mastoiditis and Meningitis in an Otherwise Apparently Healthy Adult. Brief Report of a Case. James F. McCaw.
14 *The Tuberculin Test: Cases in Which It Seemed Justified and Decisive. W. E. Casselberry.

St. Louis Medical Review, October 12.

15 *Is Cesarean Section Justifiable in the Treatment of Placenta Previa? E. Gustav Zinke.

Medical Record (N. Y.), October 12.

16 *Panhysterokolpectomy: A New Prolapsus Operation. George M. Edebohls.
17 *Strangulated Hernia in Infants. Charles N. Dowd.
18 *A Study in Heredity in Its Relation to Immunity and Selective Activity in Tuberculosis. Herbert M. King.
19 Epilepsy; Its Etiology and Treatment. J. L. Bowman.

Philadelphia Medical Journal, October 12.

20 *A Case of Gunshot Wound of the Kidney and Stomach. John B. Roberts.
21 *A Case of Gunshot Wound of Stomach, in Which Patient Recovered. G. W. Penn.
22 Partial Gastrectomy for Hemorrhagic Ulcer. L. J. Hammond.
23 A Case of Tubercular Ulcer of the Stomach. Erwin Fischer.
24 Address in Mental Disorders at the Pennsylvania State Medical Society, 1901. Robert H. Chase.
25 *The Progressive Muscular Atrophies. Edward E. Mayer.
26 *Post-diphtheritic Urticaria. Jas. J. Walsh.

New York Medical Journal, October 12.

27 *The Lane Lectures on the Social Aspects of Dermatology. Malcolm Morris.
28 *The Tonsils. Robert Levy.
29 A Case of Peliosis Rheumatica (Schönlein's Disease). Fairfax Irwin.
30 The Growth of New Bone from Periosteum. J. Herman Branth.
31 Laryngology and Its Place in Medical Education. (Concluded.) Henry L. Swain.
32 On the So-called Gluten and Diabetic Foods of Commerce. H. C. Sherman.

Boston Medical and Surgical Journal, October 10.

33 *A Brief Résumé of the Life and Work of Ambrose Paré. (To be continued.) Charles Greene Cumston.
34 *Cretinism. Charles S. Millet.
35 *Association of Anemia, with Chronic Enlargement of the Spleen. (Continued.) Arthur H. Wentworth.
36 Hernia Reduced "En Bloc;" Operation and Relief of Internal Strangulation. C. A. Porter.
37 A Case of Intussusception; Resection of Fifty-six Inches of Small Intestine; Recovery. F. G. Balch.
38 Two Cases of Intestinal Obstruction Due to Constricting Bands. John W. Elliot.

Cincinnati Lancet-Clinic, October 12.

39 *Fibrinous Bronchitis. James M. French.
40 *Nephrolithiasis: Its Diagnosis and Surgical Treatment. Joseph Ransohoff.

American Practitioner and News (Louisville, Ky.), September 1.

41 *The Puerperium. John G. Cecil.
42 *Hip-joint Amputations; With Report of a Case. William O. Roberts.
43 *Substance or Cell Life, and the Germ Considered from the Standpoint of Natural Phenomena. U. V. Williams.

44 *Instrumental and Operative Obstetrics. Arthur T. McCormack.
45 Foreign Bodies Passed from the Rectum. W. O. Roberts.

Medical Age (Detroit, Mich.), September 25.

46 Pleural and Pericardial Effusions. James B. Brown.
47 Malaria: Its Causation and Prevention. Edward F. Wells.

Medical Fortnightly (St. Louis), September 25.

48 Multiple Pathologic Dislocations: (*a*) Hip, (*b*) Wrist. A. J. Steele.
49 Suprarenal Extract—Its Use in Medicine and Surgery. A. L. Adams.
50 Tuberculosis and Toxemia. T. Blank.

Northwestern Lancet (Minneapolis), October 1.

51 A Dermoid Cyst, with Twisted Pedicle and Hemorrhage Within the Sac, Complicating Pregnancy, with Removal and Recovery. L. A. Nippert and J. E. Moore.
52 Two Cases of Pin Appendicitis. James H. Dunn.
53 The Young Man in Medicine. H. K. Read.
54 Foreign Bodies in the Ear. Frank C. Todd.

Albany Medical Annals, October.

55 The Development of Medicine and Surgery in the Albany Hospital. Albert Vander Veer.
56 *A Case of Accessory Thyroid Tumor at the Base of the Tongue. Clement F. Theisen.
57 Adrenalin Chlorid. Burton S. Booth.
58 The Relation of Bacteriology to Medicine. J. A. Wilder.
59 Clinical and Pathological Notes (Vaccination, Etc.). J. M. Mosher.

Illinois Medical Journal (Springfield), October.

60 Treatment of Abortion. Charles B. Reed.
61 Glioma of the Brain; Recovery from the Operation and Present Status of the Patient. J. F. Percy.
62 Dilating Irrigations in the Treatment of Chronic Gonorrhea, with Exhibition of a New Dilating Irrigator. E. A. Fischkin.
63 Trichinosis. Joseph Brayshaw.
64 Rectal Fistula. J. Rawson Pennington.
65 Report of a Case of Typhoid Fever in a Syphilitic Female. Wm. H. Maley.

American Journal of the Medical Sciences (Philadelphia), October.

66 On the Clinical Aspects of Plague. Lewellys F. Barker.
67 The Pathology of Bubonic Plague. Simon Flexner.
68 The Bacteriology of Bubonic Plague. Frederick G. Novy.
69 *A Case of Malarial Nephritis, with Massing of Parasites in the Kidney. James Ewing.
70 *Influenza as a Causal Factor in Acute Mastoiditis, and the Early Treatment. James F. McCaw.
71 A Method for the Differential Modification of the Proteids in Percentage Milk Mixtures. Thompson S. Westcott.

Pediatrics (N. Y.), October 1.

72 Physical Culture in Children—The Objects to Be Attained. John Madison Taylor.
73 Ringworm and Favus. A. D. Mewborn.
74 Chronic Intestinal Obstruction, with Report of a Case. D. S. Hanson.

Buffalo Medical Journal, October.

75 *A Plea for the Broader Treatment of Epilepsy. William P. Spratling.
76 Removal of the Cecum for Carcinoma: Recovery. W. L. Conklin.
77 *The Choice of an Anesthetic for Children. Edward J. Wynkoop.
78 The Two Glass Test. J. Henry Dowd.
79 Hospitals in the Smaller Towns. A. L. Beahan.
80 *The Therapeutic Value of the X-Ray in Lupus Vulgaris. Clarence A. Greenleaf.
81 A Case of Obstinate Hiccough and Its Successful Treatment. J. A. Durrent.

Canada Lancet (Toronto), September.

82 *The President's Address, Canadian Medical Association. H. H. Chown.
83 The Winnipeg Meeting of the Canadian Medical Association. George Elliott.
84 The Pathology of Gastric Ulcer. H. B. Anderson.
85 Empyema: Its Medical Aspects. R. Ferguson.

Cleveland Journal of Medicine, September.

86 *Infrapubic Opening of Pelvic Appendiceal Abscesses. J. F. Baldwin.
87 Some Facts Regarding One Hundred Consecutive Obstetric Cases. F. S. Clark.

Pennsylvania Medical Journal (Pittsburg), September.

88 Evidences of Insanity. M. S. Guth.
89 *Modern Counter Prescribing. John B. Donaldson.
90 Recent Advances in Rectal Surgery. William M. Beach.
91 Treatment of Typhoid Fever. D. R. Kunkelman.
92 A Case of Pseudo-hermaphrodism. H. F. McDowell and C. H. Henninger.

Canadian Journal of Medicine and Surgery (Toronto), October.

93 *Address in Medicine. J. R. Jones.
94 Orthopedic Treatment of Deformities and Disabilities Resulting from Diseases of the Nervous System—Special Reference to Tendon Transposition. B. E. McKenzie.
95 Nose and Throat in General Practice. John Hunter.
96 The Sanatorium Treatment of Tuberculosis. Arthur J. Richer.
97 A Trip as Surgeon with the Newfoundland Sealing Fleet. Wm. F. Adams.

Journal of Cutaneous and Genito-Urinary Diseases (N.Y.), October.

98 *The Cause of the Streaks in Nevus Linearis. Douglas W. Montgomery.
99 A Case of Dermatitis Vegetans. M. B. Hartzell.
100 On the Treatment of Certain Deep-seated or Rebellious Forms of Disease of the Follicles, More Particularly by Intrafollicular Methods. Edward B. Bronson.

Woman's Medical Journal (Toledo, Ohio), August.

101 Marie Josepha Mergler. I. N. Danforth.
102 Dr. Marie J. Mergler as Woman and Physician. Eliza H. Root.
103 Diseases of the Respiratory System in Infancy. Mary E. Phelps.

International Medical Magazine, September.

104 *On the Care and Treatment in Convalescence from Functional Nervous Disease. F. Savary Pearce.
105 Fatal Polypoid Colitis Resulting from Administration of Mercurial Inunctions. Wm. Egbert Robertson.
106 Nephrectomy for the Removal of Calculus of the Ureter. W. Wayne Babcock.
107 The Treatment of Congenital Club-foot. James K. Young.
108 Chronic Diarrhea Due to Rectal Disease. (Continued.) Samuel G. Gant.
109 The Etiology and Symptomatology of Constipation, Including the Differential Diagnosis Between Atonic and Spastic Constipation. Boardman Reed.

Fort Wayne Medical Journal-Magazine, September.

110 Inflammation and Its Treatment. D. J. Loring.
111 Chronic Urethritis: Its Diagnosis and Treatment. H. A. Klussman.
112 What Can We Do for Our Cataract Cases? G. W. Van Benschoten.

The Laryngoscope (St. Louis), September.

113 The Nose and Throat in the History of Medicine. (Continued.) Jonathan Wright.
114 *Treatment of Certain Purulent Conditions of the Antrum of Highmore Through the Natural Openings. Norval H. Pierce.
115 *Remarks on the Diagnosis of Adenoids in Infancy. Walter F. Chappell.
116 Differential Diagnosis of Affection of the Eustachian Tube and Spongifying of the Labyrinth. J. Holinger.
117 Diseases of Stenson's Duct and the Treatment. Carl E. Munger.

American Medical Compend (Toledo, Ohio), October.

118 *Infection from the Bacillus Aerogenes Capsulatus; Report of a Case. Julius H. Jacobson.
119 Some Points Regarding Renal Tuberculosis. B. Becker.
120 Pharmacologic Action of Drugs. E. M. Houghton.
121 Relation of the Alumni to the College Clinic. C. S. Miller.
122 Urethritis or Gonorrhea. Charles Louy.
123 May a Hospital Steal Cases? A. L. Benedict.

Indiana Medical Journal (Indianapolis), October.

124 *Pernicious Anemia. Wm. Charles White.
125 Dermatitis Universalis; Report of a Case. F. P. Eastman.
126 Hemorrhoids. J. N. Jerome.
127 How the Evolution of Senses Expands the World. John Fiske.
128 *Cold as a Cure for Tetanus. Joseph G. Rogers.
129 Stomach Nine Months in the Thoracic Cavity with Knife Wound of the Diaphragm; Report of Autopsy. F. A. Morrison.
130 Concerning Surgery in Berlin. F. W. Foxworthy.

Hot Springs Medical Journal, September.

131 *Drainage in Abdominal Surgery. J. W. Long.

Carolina Medical Journal (Charlotte), September.

132 Beri-beri. Gideon M. Van Poole.
133 Intestinal Diseases of Children. Howard Thompson.

Medical Dial (Minneapolis), October 1.

134 *A Modified Gastrostomy Operation. F. T. Meriwether.
135 Bacteriological Report on Mississippi River Water. J. Frank Corbett.

Kansas City Medical index-Lancet, October.

136 Cardiac Therapeutics. A. E. King.
137 Intestinal Diseases of Children. J. F. Aldrich.

138 Physical Life and Perversion of Physical Acts in Relation to the Same, with a Recital of a Few Cases. Stanley Newhouse.
139 Medicolegal Cases. N. A. Drake.
140 The Preventive and Curative Treatment of Tuberculosis. E. C. Underwood.

New Orleans Medical and Surgical Journal, October.

141 *Widal's Reaction in Typhoid Fever. O. L. Pothier.
142 *Spinal Analgesia. Sidney P. Delaup.
143 Vital Statistics in Louisiana. G. Farrar Patton.
144 Boards of Lunacy, with Especial Reference to the Examination of Patients for Commitment in the Insane Asylum. C. D. Simmons.
145 First Help in Cases of Contagious Diseases. C. L. Horton.
146 A Clinical Report of a Case of Spina Bifida. T. E. Schumpert.

Columbus Medical Journal, September.

147 The Cardiac Complications of Rheumatism. Edgar M. Hatton.
148 A Morning in a Peking Clinic. John Inglis.
149 Anodynes in Children. Richard R. Pettit.
150 Carcinoma of the Tongue. W. H. Chambers.

Georgia Journal of Medicine and Surgery (Savannah), September.

151 Pathology and Treatment of Anemia. W. E. Fitch.
152 *Our Recent Epidemic of Smallpox and Vaccination. F. J. Runyon.
153 *Report of Two Cases of Hemoglobinuric Fever. Walter Shropshire.
154 *The Management of Fevers. I. N. Love.

Texas Medical News (Austin), September.

155 The Treatment of Dysentery. E. A. Malsch.
156 A Case of Mycosis. E. P. Daviss.
157 Smallpox. S. S. Watson.
158 Acute Dysentery, with Special Inquiry as to the Use of Magnesium Sulphate. Ira D. Clemons.

Vermont Medical Monthly (Burlington), August 25.

159 Contribution to the Treatment of Tuberculosis by Means of Static Electricity, Inhalations by Compound Ozone and Immediate Absorption of Medicine Through the Skin. F. T. Labadie.
160 The Treatment of Suppuration of the Middle Ear. H. Edwin Lewis.

Medical Standard (Chicago), October.

161 The Commoner Diseases of the Eye: How to Detect and Treat Them. Casey A. Wood and Thomas A. Woodruff.
162 A Surgical Clinic (Intraperitoneal Abscess, Etc.). John B. Murphy.
163 Cataract. J. G. Huizinga.
164 The Eye and the General Practitioner. Edward B. Taylor.
165 The Rhinological Corner. Edwin Pynchon.
166 The Animal Cell and Its Therapeutic Applications. J. Rawson Pennington.

AMERICAN.

3. **Laryngeal Tuberculosis.**—Donnellan concludes that primary laryngeal tuberculosis is hardly as rare as has been generally supposed and is quite explicable from a pathologic standpoint. He reviews the literature briefly, notices special points of diagnosis, etc., and remarks on the importance of bacteriologic and histologic examinations.

5. **Kidney Stone Diagnosis.**—The etiology, symptoms, etc., are first noticed by Macrae, who sums up the following as the principal aids as regards the diagnosis: General symptoms, local and reflex; examination of the urine, chemic, macroscopic and microscopic with the centrifuge; percussion over the affected side; the ureteral catheter and sound; inspection of the bladder and ureteral orifices; the segregator. In spite of the possible exception of the actual finding of a stone in the urine, we are not absolutely convinced that we have to deal with a nephritic calculus. Still another question arises as to whether we have one or more stones, and whether, if present, they are in the ureter, kidney substance, etc. He calls attention particularly to the importance of the *x*-ray, and believes the time has arrived when it becomes our duty to submit each and every case of an affection pointing to a pathologic nephro-ureteral condition to the *x*-ray. A few exceptions to this rule may be made in cases of nephritis following the exanthems, but even here, if the condition exists, the possibility of secondary calculi must not be overlooked. He does not believe in ureteral catheterization as a routine practice and retrograde sounding of the ureter should, he thinks, be relegated to the past.

7.—See also ¶27.

9. **Pulmonary Hemorrhages.**—Bonney has made a statistical study of his cases and reports his observations with special reference to the influence of Colorado climate on hemorrhagic cases of tuberculosis. His conclusions are: 1. Hemorrhage by itself, save with a few exceptions, furnishes no criterion upon which to base a choice of climate, the indications for high altitude in uncomplicated and in not too-far-advanced cases being highly imperative independent of this single manifestation. 2. An exceedingly small proportion of recurrences may be expected in Colorado, although not necessarily reflecting accurately the degree of ultimate improvement secured. 3. Recurrences are more likely to result, and that quickly, in those cases with hemorrhage immediately preceding arrival, and hence the wisdom of a short delay following the hemorrhage before leaving home and unusual precautions as regards rest upon arrival. 4. Primary hemorrhages are comparatively rare in Colorado and usually take place incident to a rapid, progressive, destructive change in cases already with hopeless prognosis, or as a natural result of some external assignable cause, which under proper régime could be avoided. 5. Hemorrhage, while less likely to occur in Colorado than at sea level, is nevertheless, as a general rule, more severe and associated with greater shock. 6. The avoidance of hemorrhage, particularly in the early months of Colorado life, demands a most rigid compliance with detailed instructions.

10. **The Tuberculosis Question.**—Among the subjects discussed by Arrowsmith are those of the heredity of the disease, which he seems to think is effective to a greater extent than many now suppose; at least this is the case as to hereditary predisposition. The method of infection which is alone capable of adequately explaining all the phenomena is that of ingestion, perhaps, in some cases, or a combination of inhalation and ingestion. Few people breathe continuously through their noses and a large proportion of the matters suspended in the inspired air is naturally deposited on the posterior wall of the pharynx and thence inevitably carried downward in the act of swallowing. The gastric disturbances which almost always antedate tuberculosis furnish the opportunity for the bacillus to enter the system by impairing the protective power of the normal stomach secretions. Infected food stuffs are also mentioned in this connection. The sum of our knowledge relative to the antecedent causes of phthisis now seems to be that, given a favorable soil, however produced, and the proper exposure, tuberculosis will result. Just what this soil is, is hard to say, but predisposition may be either inherited or acquired. The pre-tuberculous state is mentioned and it seems to him that all of us who have not tuberculosis, may be said to be in this condition. He fails to see in what the prodromal stage of phthisis differs from that of any other debilitating illness before the characteristic symptoms have appeared. He does not favor the use of tuberculin for diagnostic purposes, considering it not entirely reliable and possibly risky. The actual symptoms on which we may place reliance in reaching a conclusion as to the existence of tuberculosis are enumerated in the following order: Insidious perversion of general nutrition, with gastric and intestinal disturbance, which does not seem to have any distinctive characteristics. A persistent tachycardia is also an indication of commencing trouble in many cases, but one of the weightiest and most observable diagnostic symptoms in his experience is some abnormal variation of the temperature. He doubts the possibility of afebrile tuberculosis. When there is a persisting abnormal temperature range, there may be a question between tuberculosis and some form of malaria, and external applications of guaiacol will sometimes clear up the doubt by relieving the fever of tuberculosis, or leaving that of malaria uninfluenced. Thoracic inspection is of little account in the early stages, though a misshapen, unnaturally small-sized chest is a presumptive indication along with other signs. The apical involvement in the beginning of tuberculosis being to the basal in the ratio of 1 to 500, careful attention should be given to the condition of apex, and while auscultation of the anterior surface may be entirely negative, yet in the supraspinal fossa and along the inner bor-

der of the scapula we may find what we are in search of. In some cases small doses of iodin 3 to 5 gr. three times a day will help to determine the condition. Physical conditions are sometimes apparent during menstruation which are absent at other periods. Unnaturally clear transmission of heart sounds without consolidation is suggestive. Skiagraphy will be a much more prominent diagnostic measure in the future, he thinks, than at present. Occasionally laryngoscopy will reveal the trouble. He says, to recapitulate, that we are justified in assuming tuberculosis on the evidence of otherwise unexplained gastric and nutritive disturbances with persistent tachycardia and fluctuations of temperature, although slight, especially with an increase after exertion—particularly if the personal history gives a coloring probability. We may be absolutely certain of our diagnosis if in addition the slight physical signs mentioned are discoverable, and notwithstanding a history of cough and possibly hemoptysis, we may presumptively discard the probability of tuberculosis if these phenomena are absent. The prognosis of pulmonary tuberculosis is perhaps the most uncertain thing in medicine. He quotes Trudeau's statistics as showing the favorable prognosis in incipient tuberculosis, but the surest way to cure the disease is to prevent it and that the possibility of this is not Utopian is shown by the decrease where sanitary regulations are now enforced. A very important matter is that a patient should be assured of the protection given by an approximately normal condition of the upper respiratory tract. Catarrhal conditions, while they do not run into consumption, increase the liability to it. He condemns the indiscriminate prescribing of change of climate, notices the great success of outdoor life, and mentions a few remedies and methods, such as serum therapy, urea, etc., and protests against the use of cod-liver oil, heroin or other opium derivatives and cough syrups. He thinks, for the relief of cough, that the laryngeal syringe is a better method than any other that may be had. Antiseptic inhalations are of great additional utility.

12. **Consumption in General Hospitals.**—The dangers of crowding general hospitals with consumptive patients is remarked by Stone, who reports cases where tuberculosis seems to have been contracted from such associations. The patients in these wards are in a low state of vitality, especially suspectible to infection, and such infection has taken place.

14. **The Tuberculin Test.**—Casselberry reports a case which seems to him to indicate the decided value of this test as demonstrating the existence of tuberculosis in its bacillary stage. In cases of positive reaction, however, we must bear in mind syphilis, and also certain cases of sarcoma and carcinoma.

15.—See abstract in THE JOURNAL of September 28, p. 856.

16. **Panhysterokolpectomy.**—Complete prolapsus of the uterus and vagina is best treated, according to Edebohls, by panhysterokolpectomy, of which the essentials consist in complete removal of the uterus and vagina followed by operative obliteration or columnization of the bed of the genital tract. The tubes and ovaries are not disturbed if healthy; if diseased, they are removed. Obliteration and columnization of the bed of the removed uterus and vagina is effected by means of from seven to nine buried purse-string sutures of chromicized catgut placed about two to two and a half centimeters apart, and running parallel to each other. Each suture gathers the raw surfaces from the periphery in circular fashion and draws or purses them together in the median line. It is buried by being pushed upward toward the abdomen, while the next suture is being tied beneath it. The effect of the completed operation is to build a solid pelvic floor ten to fifteen centimeters in depth from peritoneum to perineum, and to establish broad apposition of the base of the bladder and the anterior surface of the rectum, conditions similar to those obtaining in the male pelvis. The patient is kept in bed for a week after operation. Recurrence of prolapse is impossible after a correctly and successfully performed panhysterokolpectomy. The operation is indicated in the severest cases of total prolapse, and more especially where other operative procedures have been tried and failed. The interference with further marital relations must be explained, and accepted by the patient prior to operation. In the case of a married woman the husband must also be consulted. Four cases have thus far been operated upon by the author of the operation, all with perfectly satisfactory results.

17. **Strangulated Hernia in Infants.**—Dowd reports a case of a child three months old in which there had been evidence of hernia with symptoms of strangulation, but the hernia was reduced apparently "en bloc" without relief of symptoms and relief was gained by operation. He calls attention to the difficulties of diagnosis in some of these cases. Babies can not talk, and cry for other things as well, and he analyzes the case to show the importance of different symptoms, which he gives in the following order: 1. Tumor; 2, vomiting; 3, constipation; 4, difficulty of urination; 5, restlessness and apparent pain; 6, constitutional depression. Early operation in all these cases has been apparently the greatest safeguard.

18. **Heredity in Tuberculosis.**—King holds the view that tuberculosis produces a relative immunity in the offspring, and that the heredity of the disease is correspondingly diminished. He thinks also that in his observation the average duration of disease in cases where there have been tuberculous parents has been longer and protection should be greater than in patients with no such ancestry. The conclusions which he offers are: 1. The percentage of consumptives having a tuberculous parentage is actually smaller than that having a non-tuberculous parentage, and much smaller than would be more than accounted for by the additional risk of infection to which the former class is subjected. 2. Tuberculosis in the parents renders to no inconsiderable extent an immunity to the disease in the offspring, an immunity which of course is but relative, and not sufficiently protective, but still demonstrable, as is shown by increased resistance to the progress of the disease and increased tendency to recover among this class.

20. **Gunshot Wounds of the Kidney.**—In a case reported by Roberts there was a self-inflicted pistol-shot wound in the front of the left breast, which passed through the depending mammary gland and then into the thorax. The bullet had missed the heart, perforated the diaphragm and injured the liver as it appeared at the time. There was no excessive shock, the pulse was slow, respiration rapid and temperature subnormal. Later, however, the temperature rose together with the respiration and pulse and the patient died after having been under observation about thirty-two hours. The postmortem revealed no injury to the thoracic viscera or intestines, but a groove-like wound was seen in the lower surface of the stomach, not perforating that viscus but perforating the upper end of the kidney, the bullet being found imbedded in the muscles of the back, opposite the first lumbar vertebra. Death was apparently due to slow bleeding of the wounded kidney and septic conditions of the wounded structures. The kidney wound was not suspected during life and operation was deemed hardly necessary.

21. **Gunshot Wound of the Stomach.**—Penn reports a case of gunshot wound of the stomach which was somewhat lower down than President McKinley's wound and was received when the stomach was full. The patient vomited freely as soon as shot, the vomitus consisting of the meal just eaten, together with quantities of clotted blood. He was fed exclusively on the mucilage of the cactus or prickly pear for fourteen days, which was allowed from the first, gradually returning to a full diet. There was never any decided rise of temperature and no evidence of peritonitis. The case is of interest as showing the unaided curative action of Nature occasionally in such cases.

25. **Muscular Atrophies.**—Mayer reports three cases illustrating the difficulties in the diagnosis of the different forms of this condition. One was apparently a case of fascio-scapular humeral dystrophy of the Landouzy-Dejerine type, but presenting certain peculiar features, it having run an acute course, being associated with pseudo-hypertrophy in the thighs and early appearance of contractures. The other two cases also present similar difficulties. He thinks we still cling to the idea of primary muscle disease in the want of more exact

knowledge as to the nervous involvement, which investigations have not yet satisfactorily demonstrated.

26. **Postdiphtheritic Urticaria.**—Walsh remarks on the occurrence of urticaria following the use of antitoxin to which it is credited, and reports a case in which urticaria followed a mild attack of diphtheria in which no antitoxin was used. He believes that careful study of the conditions produced by diphtheria itself will relieve the diphtheria serum from some of the accusations that have been made against it. It has been too much the custom to attribute every unusual symptom occurring after its administration to its agency, while some of these are undoubtedly due to anomalies in Nature s protective reaction against the toxins of the disease.

27. **Lane Lectures.**—This fifth lecture of Dr. Morris takes up the subject of tuberculous skin affections. He still recognizes the utility of the word scrofula as indicating a special delicacy of tissue, making it vulnerable beyond what is seen in the healthy state. He thinks the inoculation of lupus is a possible accident of vaccination, though it must be very rare. Other forms of skin tuberculosis, such as postmortem warts, the possibility of infection from ritual circumcision, tuberculous ulcers, scrofuloderma, lichen scrofulosorum and the various forms of tuberculides are also noticed.

28. **The Tonsils.**—Levy considers that the local causes of tonsillar disease are more important than the symptomatic causes and that the proper management of local conditions would prevent subsequent diseases. When the tonsils appear enlarged it has been the practice to remove them. He asks how we can preserve the protective functions which so many good authors recognize and how we may overcome the conditions and the etiologic factors for which the tonsils are responsible agents. In the majority of instances, especially in adults, complete enucleation of the diseased tonsil should be performed. The best method for this in adults is, he thinks, the galvanocaustic snare and where this is impracticable complete dissection of the diseased tissues may be accomplished by properly-constructed galvanocautery electrodes. In children amygdalotomy has its uses and advantages, and only in those cases where recurrence after a former amygdalotomy has taken place or where there is a diseased condition without hypertrophy, such as is seen in adults, should the more difficult and radical procedure be undertaken. In conclusion he insists that no operation on the tonsils should be performed simply because the structures are not absolutely normal in appearance, but only when distinct and well-defined symptoms exist, referable to these organs as the obvious cause.

33. **Ambroise Pare.**—Cumston's article is an interesting historical account of the life and times of Ambroise Paré.

34. **Cretinism.**—Millet gives a brief account of the facts in regard to cretinism, and also reports a couple of cases which had been treated with thyroid with benefit, but not with complete relief.

35. **Splenic Anemia.**—As far as it appears in this issue, Wentworth's article is a continuation of the discussion of the literature of the subject.

39. **Fibrinous Bronchitis.**—French reports and illustrates a case occurring in his own practice and reviews the etiology —which is not so characteristic—pathology, symptoms, prognosis and treatment of the condition. He considers the prognosis always grave, especially in the extremes of life, and much more serious when it occurs in the course of other affections than in the presence of fair health. He uses carbonate of creosote, in which he thinks he is the pioneer. He was led to use this by his observation of its action on bronchial secretion in other affections and also by the suspicion that tuberculosis might be present in the case. Improvement began immediately after its administration, and while a single case does not demonstrate much and the dose was small, he mentions it as being of some possible value.

40. **Nephrolithiasis.**—Ransohoff notices the diagnosis, treatment, etc., of nephrolithiasis and considers that the tenderness elicited in renal colic on bimanual examination of the kidney is an almost distinguishing feature, even in cases where enlargement can not be felt. He also thinks that uranalysis will do much in the diagnosis, and that decrease in the urine is sometimes of importance. Hematuria is always present, though rarely profuse. While profuse hematuria may follow acute kidney-stone colic, it more generally points to intermittent hydronephrosis, acute exacerbation of a chronic nephritis, and above all to malignant disease. If the colic has passed, the second symptom-group appears, such as pain spontaneously, or caused by pressure, urine changes, and general symptoms indicating the progressive septic changes in the kidney before it has come to proportional enlargement. While no one of these is pathogenic, their grouping is generally such that a correct diagnosis can be made. Pressure pain is much more important than spontaneous pain. Microscopic hematuria in the urine is also of importance. We should also employ cystoscopy to exclude vesical disease and to observe the changes around the ureteral orifice. He has had little positive results with radiography, and has removed quite large stones in which the method failed, but he thinks that in the future he may be enabled to get some positive results. When the colic fails to be followed by the passage of stones the indications for operation are strong, the case is parallel to that of gallstone, and trouble may ensue at any time. We should not wait for suppurative pyelitis or pyelonephritis to compel an operation as a life-saving measure. Nephrolithotomy should be a routine operation; its mortality is low and he thinks that a longitudinal section made along the convexity of the gland is less likely to wound the large vessels, and it need not be longer than necessary to introduce the exploratory finger, and compression of the pedicle of the kidney may be employed for short periods without any harm to completely control the hemorrhage. Drainage is seldom required. When in consequence of irritation from, and secondary infection due to stone, the kidney is enlarged and sacculated, nephrotomy and drainage are the procedures to be adopted, though the results are not so favorable. Nephrectomy is reserved for extreme cases where the disorganization of the kidney is such that it can not be recovered from.

41.—See abstract in THE JOURNAL, XXXVI, p. 1725.

42.—Ibid., p. 1726.

43.—Ibid.

44.—Ibid., p. 1725.

56. **Accessory Thyroids.**—Theisen reports and illustrates a case where there was a large tumor nearly the size of a hen's egg situated at the base of the tongue in a patient who, when young, had a very well-marked goiter and in whom at the present time there is no thyroid perceptible in its proper place. The troublesome symptoms seemed to be due to the size of the growth, but it did not seriously interfere with respiration. It was considered inadvisable on account of its size to operate, but thyroid medication was tried without bad effects and the tumor seemed to gradually decrease. He reviews a number of cases reported in the literature and remarks on the peculiar fact that all cases of accessory thyroid thus far reported in this situation have occurred in women.

69. **Malarial Nephritis.**—Ewing found in 14 fatal cases of malaria seen mostly in Montauk in 1898, extensive degenerative changes in the kidney, once the lesions of hemaglobinuric malaria, but comparatively few or any parasites in the renal vessels. The case here reported, however, shows the clinical symptoms of hemoglobinuric nephritis, with partial suppression of urine, and gives clear microscopic evidence of extreme massing of parasites in the kidney, apparently contradicting Marchiafava and Bignami's deduction that the lesions are not due to such localization, but to some toxic substance eliminated through the kidneys. In this case there was no doubt that the renal lesions were the principal features and that the case was one of true malaria in which the hemorrhagic character was due to massing of these parasites. The extreme degeneration of the cortical tubules is also a peculiar feature. He concludes as follows from the literature and his own

observations: "Microscopical examination of the kidneys of fatal cases of malaria has, then, yielded evidence of three main types of acute renal lesions occurring in this disease. 1. Acute degeneration of toxic origin, often reaching a degree in which exudation of blood serum into the tubules is added. This lesion is responsible for the vast majority of the cases of albuminuria in malaria. 2. An extreme form of acute degeneration, with focal necroses, numerous hemorrhages, and exudation into the tubules of the blood serum and blood pigments. This lesion is seen in cases of hemoglobinuric malarial fever, and it has not yet been found associated with an excessive number of parasites in the capillary vessels. 3. Massing of parasites in the renal capillaries, with extreme degeneration of parenchyma cells, multiple hemorrhages, and exudation of blood serum into the tubules. It seems certain that this type of lesion can occur only in severe estivo-autumnal infections. There is anatomical evidence that in the pernicious estivo-autumnal cases, the three types of lesions may be variously combined, but no good reason for believing that with the benign tertian infection occurring in this latitude any other than the first type can exist."

70. **Influenzal Mastoiditis.**—McCaw calls attention to the frequency of mastoiditis immediately following epidemics of influenza consequent on tympanic infection, which is, therefore, tympano-mastoiditis. The cases seem to be slow in recovery, the clinical picture being one of a very active suppurative process in a tissue of low vitality. In the severer type of cases he believes that la grippe is responsible for more cases of acute suppurative mastoiditis than either scarlatina, measles or diphtheria. From Perez's experiments he makes the suggestion that we may have one inflammation due to inoculation of Pfeiffer's bacillus alone, whereas in the other variety it may be associated with pyogenic organisms, and the virulence of each may be increased. As regards treatment, his best results have been obtained in the hemorrhagic type by rest in bed, free catharsis, leeching in front of the tragus and over the mastoid, and from douching of the canal every two hours. He is well aware that this method of hot douching has been criticised, but it has not been followed by bad consequences and has given him the largest percentage of recoveries. In the suppurative cases he uses early and free incision of the drum, warm douching every two hours with cleansing processes, catharsis and, if this does not relieve the patient in 36 to 48 hours, the case will be one for surgical interference. The amount of destruction which may take place in a short time is very notable. He has seen the entire mastoid in a purulent and necrotic condition with involvement of the facial nerve and facial paralysis in one week from the first ear symptoms. When we feel satisfied that pyogenic disease of the mastoid exists, our duty is to open the cells and not try to palliate or abort. In conclusion he emphasizes that we have two distinct types: "1. The suppurative, which invades the tympanum, antrum, and cells almost simultaneously in an unusually virulent and destructive process, which calls for early surgical treatment and in which abortive measures are contraindicated. 2. The hemorrhagic, with very pronounced symptoms at first, but which yields readily to abortive measures, and, in the writer's experience, only about 5 per cent. go on to suppuration requiring radical interference."

75.—See abstract in THE JOURNAL of October 19, ¶143, p. 1068.

77. **Anesthetics for Children.**—Wynkoop reviews the opinions and facts as regards the action of anesthetics in children and comes to the general conclusion that ether can be used with greater safety than any other anesthetic, while the combination with nitrous oxid is of value. Ether alone has few contraindications if properly administered.

80. **X-Ray in Lupus Vulgaris.**—Four cases of lupus vulgaris treated by the *x*-ray are reported by Greenleaf, who finds that this is the most satisfactory treatment for the condition and that repair begins almost immediately, that the danger attending the treatment is minimal, that the surroundings and general condition of the patient are important elements in the ultimate results, and that cases not subjected to surgical treatment react rapidly and ultimately recover, whereas, cases that have been surgically treated, react in a degree of slowness depending on the extent of the previous surgical interference.

82.—See abstract in THE JOURNAL of September 14, p. 711.

86. **Pelvic Appendiceal Abscesses.**—Four cases of pelvic appendiceal abscesses are reported by Baldwin, who thinks their opening per vaginam or per rectum is the simplest and most natural procedure and will lead to temporary recovery. If the appendix continues to make trouble, its removal in an interval operation will be attended with an absolute minimum of risk, while to open such an abscess by abdominal incision and across the open peritoneal cavity causes most serious risk and if peritonitis is obviated by extensive packing there is an almost inevitable chance of hernia.

89. **Counter Prescribing.**—Donaldson finds the druggist is better equipped to do counter prescribing than ever before. He has on his shelf proprietary remedies that save him the trouble not only of compounding, but also of selecting. The patient makes the diagnosis and the druggist has the remedy mixed, labeled and guaranteed. He took the trouble recently to make a list from a druggist's shelves of the diseases treated by modern counter prescribing. He found there 18 sure cures for consumption, 22 for rheumatism, 12 for gonorrhea, and special remedies for other diseases such as diabetes, etc., together with numerous shotgun mixtures, called pain-killers, blood-purifiers, or system-renovators that cure all diseases. He says it would not do to say to our patients "do not use patent medicines" for they would think it selfish in those advising them. The only legislation man can conceive that would mend matters would be one to require manufacturers to put the ingredients on each package. The physician should avoid prescribing proprietary remedies in the original packages as it teaches patients to treat themselves and gives them the little knowledge that is often dangerous. There is no need of telling the patient what drugs he is taking. If you listen in a drug store to the people you can hear them ask for quinin, morphin, ergot, calomel, bromid of potash and dozens of remedies of which they have obtained knowledge through the physician. Poisonous or dangerous remedies should be ordered off the market. Among these he mentions a "female regulator" that is put on the market, which is an ideal abortifacient so far as drugs are capable of acting in that way.

93.—See abstract in THE JOURNAL of September 21, p. 742.

98. **Nevus Linearis.**—The cause of the streaks in nevus linearis is discussed by Montgomery, who reviews the various theories and reports a case. The view that seems most nearly to fill the requirements is, that nevus linearis originates at an early stage in the development of the fetus when the embryonic layers are still a plastic mass. The disturbing agent, whatever its nature, usually affects what will later become the papillary layer of the skin and usually falls on one or the other side of the median line. Imagining the affected cells or groups of cells to lie in the plastic cells like currants in dough one can see that such a group lying in the region which later becomes the back of the neck, might be pulled toward the median line when the skin closes over the neural canal, and its individual constituents become scattered along this line as the fetus elongates. Another group situated over the place where the limb will afterward bud out, would be stretched along this line with the budding limb, and the line would tend to follow all the twists and turns of the limb as it grew out, exactly as Kaposi has so graphically described. This view would explain the frequent unilaterality of the affection, and its occurrence along the fissures of the body, as along the branchial clefts. There are some objections to this view, but he concludes that, on the whole, it is the most probable one that can be offered.

104. **Convalescence from Functional Nervous Disorders.**—The management of the convalescent stage of functional nervous troubles is discussed by Pearce, who insists on the importance of mental methods, though not dwelling on this phase of the subject extensively. He thinks the patients must be schooled

or educated into self-control. The physical care, that is, the necessity of rest and of exercise to a limited degree, is also mentioned as important, and he thinks the most desirable forms of exercise in this stage of neural disorders are to be in a general way different from those of the ordinary routine of the patient's life; that is, keeping him away from his ordinary mode of thought and from thinking about self. If the patient can be kept off his feet to a certain extent it will be advantageous. As for the adjuvants to mental rest we have intestinal antisepsis, colon flushings, diet, hypernutrition, massage, electricity and avoidance of excitement.

114. **Antrum Abscess.**—Pierce thinks that the ostium and accessory openings of the antrum of Highmore have not been utilized sufficiently in the treatment of empyema. After a few remarks on the anatomy he describes his method of treatment by washing out the antrum and reports a number of cases. In conclusion he says: "1. There is a strong evidence to warrant the belief that in diseased antra, accessory openings are more frequently found than in healthy antra. 2. In a certain number of cases the ostium may be used to irrigate the antrum. 3. We should in all cases, whether for diagnosis or treatment, try for the ostium or accessory openings before resorting to surgical puncture, whether through the inferior or middle meatus, the canine fossa or alveolar process. 4. It is of no importance whether the opening through which we irrigate be the ostium or an accessory opening."

115. **Diagnosis of Adenoids.**—A number of conditions that may cause confusion and lead to diagnosis of adenoids in very young children are enumerated by Chappell. He has not, himself, been able to demonstrate to his satisfaction the presence of adenoids in young infants. Among the conditions which he mentions are lymphatism which may cause enlargement of the cervico-bronchial glands in which the mucosa of the trachea and bronchi are principally affected and which may often be present at birth. In all degrees of obstruction beyond the uvula the infant is obliged to remove the nipple from the mouth every few minutes to get air, but when the obstruction is lower down, the nipple may be retained in the mouth during feeding. When stenosis of the tracheo-bronchial tract exists, sonorous and asthmatic chest sounds may be heard while the child is nursing, which cease when the nursing is over. Lithemic infection is usually confined to the superficial tissues, but may spread beneath the pharyngeal aponeurosis, forming a small retropharyngeal abscess. When infants with a family history of gout or rheumatism have recurring attacks of rhinitis, pharyngitis, trachitis and bronchitis there may be indications that suggest adenoid obstruction. Syphilitic or gonorrheal rhinitis may produce nasal obstruction and congenital atelectasis may cause respiratory symptoms which may sometimes be mistaken for adenoids. Digestive disturbances causing vomiting and regurgitation of milk curds lodging in the nasal passages also give confusing symptoms. Large tongue, though rare, may be a serious cause of respiratory obstruction and Billard claims there is a non-traumatic esophagitis, which may cause considerable pressure on the trachea and larynx. Chappell has had patients in which he could make no other satisfactory diagnosis. Hypertrophic rhinitis is common in children though general among those of more advanced age. Septal spurs, foreign bodies in the nose, etc., should all be looked for in this connection.

118.—See abstract in THE JOURNAL of September 28, p. 850.

124. **Pernicious Anemia.**—From a review of the facts of this condition White concludes that we have in these cases to deal with some agent which increases blood destruction and interferes with blood regeneration both in the marrow and the lymphatic glands, and that it is not of the common order of the infections, from the different responses which the organism makes to it. The resistance of the individual probably plays a very important rôle and he thinks that from the analogous parasitic condition the agent is more likely to be an animal poison or possibly a ptomain than anything else. In short, he holds that we have here a special poison choosing for its seat the whole blood circulation.

128. **Tetanus.**—From the fact that tetanus germs are susceptible to cold and that the reduction of temperature interferes with their vital activity and sporulation, Rogers has employed ice applications in incipient cases where the tetanic conditions had already spread to the trunk, neck and extremities. The arrest of progress in the development of the disease was manifest in a few hours and after four days there was a gradual lessening of the convulsive symptoms which ceased entirely on the fifth day. The patient then suspended of his own accord, the ice treatment. The symptoms returned in thirty-six hours, but with diminished force. On renewal of the treatment the good results followed even more quickly and three days later treatment was permanently suspended. A second case is also mentioned where similar treatment was instituted with like results.

131.—See abstract in THE JOURNAL, XXXV, p. 1425.

134. **Gastrostomy.**—In the patient described by Meriwether there was a carcinomatous tumor of the pyloric end of the stomach and also a cardiac mass obstructing that region. Gastroenterostomy was performed with the Murphy button and gastrostomy as follows: An external opening had been made by an incision of four inches over the inner edge of the left rectus joined by a transverse one from its upper end extending to the left for three inches. A rubber tube was next inserted in about the middle of the anterior surface of the stomach, emerging at the end of the transverse incision through the skin. Two catgut sutures were applied below the opening in the stomach, then six sutures, each one-fourth of an inch further above and below the tube than the preceding one, the sutures being half an inch apart and passing through the peritoneum, then through one-fourth of an inch of the two external coats of the stomach, then over the tube, then through the stomach as before, and then through the peritoneum. A last suture was passed through the two coats of the stomach and then under the tube, making something like a purse-string suture. All these were of catgut. When tied they brought peritoneum to peritoneum and formed a fluid-tight, funnel-shaped canal leading from the skin to the opening in the stomach. The peritoneum was stitched around the portion of the tube where it emerged and the skin and muscle closed by through-and-through sutures of silkworm-gut. One fine catgut suture was placed through the tube where it entered the stomach to anchor it. The patient was fed before leaving the table after the stomach had been washed out. She came out of the operation well, gained in weight and about four months later appeared to be in good condition. Three months after the operation she removed the tube and refused to allow it to be permanently replaced. At one time it was left out thirty-six hours, but there was no difficulty in reintroducing it. Five months after the operation, however, the old difficulty in swallowing returned and she gradually sank, living, however, until November. The button came away on the eighty-first day.

141. **Widal's Reaction.**—Pothier considers the positive Widal reaction of great value and always to be considered as indicating typhoid fever, while a negative result does not mean anything *per se*. While several negative results may strongly point to a non-typhoid case, the clinical course of the disease is a better criterion. He mentions a method of diagnosis used in the New Orleans Charity Hospital, consisting in making cultures from the urine of patients, which is collected in sterile tubes after careful asepsis of the parts and, if necessary, by catheterization. Two or three loopfuls from this urine are planted on an agar-culture tube or in bouillon, incubated for twenty-four hours and then tested with a known typhoid serum as to whether or not it is typhoid. As a rule these cultures are pure.

142. **Spinal Analgesia.**—Delaup briefly reports 22 cases and describes his method of using cocain injections. He has seen but little inconvenience from the operation; perfect analgesia was obtained in 90 per cent. and partial in 9 per cent. In 41 per cent. there were not the slightest subjective or objective symptoms. Nausea occurred in 36 per cent. and there was a slight general malaise for a few minutes. Headache was

the most common symptom, noted in 50 per cent. of the cases, never lasting more than from twelve to twenty-four hours; temperature elevation was of short duration, never above 102 F. Pronounced malaise, chills, depression, and in fact shock, was observed in but one case. Increased pulse-rate is a very unreliable symptom, the nervousness of the patient is liable to account for it. If there is febrile or irregular heart action small doses of strychnin or nitroglycerin may be administered hypodermically. It is a good plan to give a preliminary subcutaneous injection of strychnin with a little morphin. Involuntary defecation took place only once. He is not sure whether the disagreeable symptoms are the result of the drug itself, or the result of disturbance of the nerve centers from increase or decrease of intraspinal pressure. But the method can never be used with a certain class of patients, like children and nervous women, in which the loss of consciousness is essential. While he does not consider it an ideal anesthetic, or that it in any way replaces the general method, it has a special sphere of usefulness in genito-urinary and rectal surgery and surgery of the lower extremities. In many cases of pulmonary, cardiac or renal disease it would be far less dangerous than chloroform or ether.

152. **Vaccination.**—Runyon has little faith in glycerinated virus. He has found it ineffective in many patients and some patients he has known to suffer from subsequent smallpox when exposed. He believes that the humanized virus is best, though it is not certain that its immunity persists longer than that from points. The next best is bovine on bone slips. He thinks that children should be vaccinated in infancy and again in five years, and revaccinated when liable to be exposed to smallpox. In this way they will avoid serious effects from the operation which sometimes occur when it is delayed until ordinary immunity is completely lost.

153. **Hemaglobinuric Fever.**—With the two cases here reported Shropshire remarks in regard to the origin of the condition. He doubts entirely the effect of quinin in producing it, and considers the disease as a primary malignant fever due entirely to the action of the plasmodium. He uses quinin freely in cases with good results.

154.—This article has appeared elsewhere. See THE JOURNAL of September 7, ¶64, p. 663.

FOREIGN.

British Medical Journal, October 5.

Shock in Abdominal Operations. GEORGE A. HAWKINS-AMBLER.—The author does not attempt to give a definition of shock, but quotes a number that have been offered, among the more scientific of which he includes that of Erichson, who describes shock as being due to a general exhaustion of the nervous centers consequent upon extremely violent afferent impulse, and that of Goltz, quoted by Crile, as a vasomotor paralysis resulting from mechanical violence. While we have not a satisfactory definition, we have learned more in regard to the subject and he refers to Sherrington's work, pointing out that operative interference in a healthy animal is followed by a certain degree of apoplasmia or drying up of the blood. The degree of apoplasmia depends to some extent upon the severity of the lesion, but is always considerable and must always be taken into our calculation. With this increase in specific gravity, Sherrington also observes an increase in the hemoglobin content of the blood and increase in the number of chromocytes per unit volume. The ratio of leucocytes to chromocytes was always increased and there were alterations in the proportion of other blood cells. The different nerve cells also give important evidence. Crile quotes Hodge's investigations on microscopic investigations of nerve cells at rest and in fatigue, showing that repeated afferent stimuli exhaust the bulb; the equilibrium of the nervous system is more or less upset. We must differentiate also between shock and acute sepsis, which offers similar symptoms. Some cases of apparent shock are really cases of acute sepsis, and if we look in the mediastinal glands and other organs we shall find evidence of this. Special points, however, here given as important elements in the causation of shock are the matters of time and engorgement and dilatation of the splanchnic area. In abdominal operations in which we are operating in the midst of vasomotor nerves and ganglia which control an immense venous area, the dilatation of which must mean a remarkable difference in the blood pressure throughout the circulation, the effect on the heart might be immediate. The author refers especially here to Crile's work, one of the latest, most practical and suggestive on the subject. Bearing these things in mind, what are we to say about the treatment? The best he thinks is preventive. We should prepare for shock and minimize it by the very best methods. The old-fashioned plan of preparation of patients by a short holiday is an excellent thing in its way. Improvement in the general health should be looked after. We sometimes starve our patients too much before operation and with hot douches, drastic purges, etc., reduce them so that the addition of fear is all that is necessary to bring them to a state of semi-collapse before they get on the table. An empty stomach, desirable as it is in many cases, may be procured at too great a cost. Preliminary injection of saline solution into the rectum before operation may add a great deal to the patient's comfort and improve the chances, or a little brandy with hot water may be of advantage. The question of anesthetics is important also. Any anesthetic may have its action in increasing the shock. Crile finds that he prevents shock by cutting out the afferent impulses, blocking the nerves with cocain, but this is not so easy in abdominal surgery. Hawkins-Ambler's opinion is that the element of time is the most important; Lawson Tait's success he attributes largely to his rapidity in operating. The question of the temperature of the operating room, preliminary preparation, etc., is important, and he says it is a good plan to flood the peritoneum for a time with hot saline solution in protracted operations. The next point is thirst; if we take thickening of the blood as evidence and standard of shock the intense thirst is an indication of it and the practice of starvation in the hope that the thirsty tissues may be compelled to lap up the exudates into the peritoneal cavity to prevent sepsis, and peritonitis may very easily be overdone. Shock should be met by replacing fluids withdrawn from the circulation, by restoring to the dried blood the more spacious circulatory medium in which its cells may move without increasing the friction coefficient. If there is no vomiting, fluids may be given in small quantities by the mouth. Hot water can be sipped, and the very act of slowly sipping has been shown to improve the pulse by antagonizing the inhibitory action of the vagus. Minute doses of brandy and water also sipped at intervals have a very sedative effect. Saline injections given per rectum, or if necessary hypodermically into the veins are advantageous. The difference between shock and hemorrhage is perhaps after all not so great; it is largely the loss of oxygen carriers in the latter case. If the blood is pooled in the splanchnic veins, both plasma and corpuscles are removed from active usefulness. The introduction of saline will largely remedy this. With flushing of the peritoneum to prevent sepsis we shall also promote its resisting powers, and he insists, therefore, on the use of saline solutions. As for drugs, they must be secondary, and as to maintenance of body heat by wrapping the patient, etc., he has but few words to say. Very small doses of strychnia are of value, and also small doses of morphin and atropin given hypodermically before the patient leaves the table at the close of a severe operation.

When and How to Operate on Uterine Fibroids. WILLIAM DUNCAN.—The author believes the following conditions call for interference in uterine fibroids: Hemorrhage, when there is severe menorrhagia or metrorrhagia and the uterus is enlarged by fibroids. The first thing to do is to dilate the cervical canal and explore the uterine cavity for polypi or submucous growths. This should be done before resorting to more radical measures. He does not believe much in operating through the vagina, and removal of the appendages to stop hemorrhage or arrest the growth of tumor. Hysterectomy can, he believes, be best carried out by the intraperitoneal method, which has the advantage of showing whether there are any adhesions of the bowel or omentum to the tumor, or whether

the Fallopian tubes contain pus. The second indication for operation is when the tumor is causing pressure on the bladder, the rectum or cervical nerves. When it can be pushed above the brim of the pelvis and kept there, operation may be avoided, but when it can not, nothing but hysterectomy is of use. When a fibroid tumor takes on a rapid growth this is due either to cystic or mucoid degeneration and always calls for hysterectomy without delay. Lastly, when a fibroid complicates pregnancy the risks are greatly increased, though the position of the growth has much to do with this. If the fibroid is situated at the upper uterine segment or is subperitoneal and not impacted in the pelvis, pregnancy and labor may in many cases proceed naturally and terminate favorably. Such cases should not be interfered with. When it occurs in the lower portion of the pelvic, obstructing the pelvic brim, we have either to empty the uterus, to perform hysterectomy, or allow the case to go on to full term and save the child by Cesarean section and then remove the uterus. He would feel disposed in such cases to try abortion first, and if that failed to resort to hysterectomy. The dangers of shock with heart failure and tympanitis from intestinal paralysis are mentioned. In order to prevent the first it has been his custom to administer hypodermically 3 drops of liquor strychniæ, B. P., three times a day for a week prior to and a week after the operation. A nutritive enema after the operation is administered every four hours, with the addition of one-half an ounce of brandy if the patient is very feeble, and, if the flatus is not freely escaping twenty-four hours after operation, an ounce of spirits of turpentine in a pint of hot water is passed high up in the bowel. This may be repeated in twelve hours. He attaches great importance to this and to the strychnia injections. As regards the operation itself, he ties off both the ovarian and uterine arteries on both sides before cutting down the peritoneal flaps; thus preventing loss of blood to any great extent. After the flaps are reflected down to the level of the tied uterine arteries, the cervix is cut across and the tumor removed. Any oozing points in the cervix are tied with catgut, and then the peritoneal flaps are carefully brought together with fine silk in a continuous Lembert suture. Where the tumor burrows between the layers of the broad ligaments and a large cavity is left after their removal, instead of draining this, he carefully whips the sides together from below upward by a continuous suture after all oozing has been controlled and the cases do perfectly well. The abdominal wall is sewed up by three layers of continuous suture, fine silk for the peritoneum, coarse silk for the sheaths of the recti and coarser for the skin. In this way he feels sure that the occurrence of ventral hernia later on is prevented.

On a New Gynecological Position. F. JAYLE.—In this note in the *British Medical Journal*, Jayle points out that Scultetus had recommended what is really the Trendelenburg position before 1645, and there was also a drawing in a still earlier, 13th century publication, showing the position during the operation for hernia. What he specially calls attention to, however, is the combination of the ordinary position of the speculum or of the lithotomy position and of the Trendelenburg position. In order to obtain this it is necessary to have a balancing table with a system of shoulder rests, holding the patient in position without securing the lower members, which remain free. This can be used either for examination or operation. It has the advantage of throwing back the intestine, of determining by the entrance of air the dilatation of the vagina, which becomes almost vertical, and finally of stretching the anterior vaginal wall. It greatly facilitates the exploration of the tubes and ovaries, especially the uterus. The introduction of the speculum is very easy and exploration of the vaginal wall is easy, for it is sufficient to depress the perineum either with the finger or with a valve speculum in order to get a good view of the anterior walls always, and very frequently of the cervix. For operations it must be used combined with the lithotomy position. If the patient be put only in a half declivity, vaginal operation becomes much easier. The anterior wall is stretched out and with a weight valve you can press down the perineum, and no assistant is necessary for holding the valves. He specially calls attention to the utility of this method in vesico-vaginal fistula operations.

Ovarian Pregnancy. HASTINGS GILFORD.—The published cases of ovarian pregnancy are reviewed by Gilford, who finds 16 cases and 12 probable ones, or 28 altogether. He thinks that many have been reported under the names of blood cysts, rupture of the ovary and ovarian apoplexy. He asks how conception within the Graafian follicle can take place. One explanation is that the sperm cell enters through the aperture produced by the bursting of a follicle and impregnates an ovum which has not yet escaped. The opening then heals over and pregnancy goes on in the sealed sac. The other is given by Schroeder, who thinks that the spermatozoa may possibly penetrate through the coat of the follicle at its most attenuated part. The former of these, he thinks, is the more probable, though it does not necessarily follow that the rent in the follicle closes.

Further Report on the New Operation for Prolapsus Uteri, with Notes of Forty Cases. J. INGLIS PARSONS.—Four years have elapsed since this author first adopted the operation here described. It does not interfere with pregnancy; the general idea is to strengthen the bands within the broad ligaments and enable them to hold the uterus up. The principle of treatment is very simple. It consists of taking advantage of Nature's reparative powers. The idea is simply to furnish a stimulus for the formation of lymph which repairs the ligaments when a joint is dislocated, and after thinking the subject over he decided to try this in uterine prolapse, to help Nature to repair the overstrained broad ligaments. The choice of re-agents requires consideration; it should be aseptic, the effect should be entirely local, and any absorption that takes place should be harmless. Sulphate of quinin most nearly fills all these conditions. When injected into the cellular tissue of the arm it appears to be precipitated and causes an effusion of lymph which remains for some weeks. It is also aseptic, and is a tonic to the general system if absorption occurs. A solution of this is injected into the cellular tissue of the broad ligaments from the vagina. The uterine arteries and veins lying on the inner side of the broad ligament are not in the way if the needle is inserted at the right point, as also holds true of the ureters, while the outer two-thirds of the lower half of the broad ligament contains no veins or arteries of any size or importance, and can be freely laid open from the vagina without having to tie a single vessel. The operation takes only a few minutes, and is not risky if performed with precision, proper care and antiseptic precautions. There is no rise of temperature as a rule. It is essential that the point of the needle should be within the folds of the ligaments and within the cellular tissue. An anesthetic is of advantage, though not absolutely necessary. The patient is placed in the lithotomy position and the parts aseptically prepared, the rectum, of course, having been emptied as well as the bladder. The posterior wall of the vagina is pressed down with a Sim's speculum, while the anterior is held up by a retractor. If they roll together in folds and block the view of the cervix two lateral retractors may be required. The injection is made with a thin, long, straight, rigid nozzle syringe and a needle about one inch in length and rather thicker than a hypodermic, and is passed on each side through the vaginal wall, taking care the direction of the needle is perpendicular to the base of the broad ligament and parallel to the long axis of the uterus. The needle should always be tested as the quinin solution corrodes it and it may then snap off. Some pain is felt after the injection, varying in different individuals. When the patient is lifted into bed the uterus should be well anteverted bimanually. A cup and stem india-rubber pessary secured by bands around the waist is inserted to keep the uterus well up until effusion of lymph has taken place. It will then be removed, as the uterus at the end of four or five days is held up by the effusion. The strength of the solution should be attended to. If too strong it will cause suppuration, or if too weak will not be sufficiently stimulating. For the past twelve months he has used a solution of 1 in 5, and the average amount inserted is 30 to 45 minims on each side. The temperature usually re-

mains normal. There may be a slight aching in the pelvis for a few days. It does not follow that one injection is sufficient, the condition of the parts, weight of the uterus, duration of prolapse and labor afterward will have to be considered. None of his patients have ever had the least signs of cinchonism, though in most instances as much as 12 grains have been injected at one sitting. He tries to keep his patients at rest after the operation for a certain time as much as possible. Of the 40 cases that he has operated on and which he tabulates, only 2 have relapsed, 4 have been only improved, while the other 34 patients have remained well.

Presse Medicale (Paris), September 18.

Ocular Disturbances or Deformities in the Insane. M. DE MONTYEL.—Mignot found that only 19.5 per cent. of 82 insane persons he examined had normal eyes, and that in 41.4 per cent. a deformity of the pupil coincided with some ocular disturbance. In the present communication, the results of the examination of 77 insane subjects showed that only 16.8 per cent. were normal in this respect. The pupils were unequal in 37.7 per cent. In certain subjects the ocular deformity and disturbances were very pronounced, but in the majority they were slight.

Revue Hebd. de Laryngologie (Bordeaux), September 21.

Ozena in Sinusitis. J. E. TORRENT.—In five cases of sinusitis, the clinical symptoms of ozena were presented in a pronounced form but they all vanished as the sinusitis yielded to treatment. Torrent believes that true ozena is a morbid entity, rebellious to treatment, but that all the symptoms can accompany an ordinary sinusitis and simulate true ozena, unless the actual cause is discovered in the sinusitis.

Syphilitic Peripheral Paralysis of the Muscles of the Pharynx. CHARLES.—A hitherto healthy child of 3, with apparently healthy parents, manifested symptoms of pharyngeal paralysis, such as are usually attributed to a known or unnoticed diphtheria. In the absence of any probable source of diphtheritic infection, Charles instituted specific treatment, with the cure of all the symptoms in twelve days. The father confessed later that he had a "disease with pustules" before marriage.

September 28.

Lithiasis of the Submaxillary Gland. LAFARELLE.—The pains caused by the presence of calculi in the submaxillary gland are frequently ascribed to the throat and ear, as they radiate in all directions. Two cases are described, one in a woman of 40, the other in a man of 45. Besides the functional and physical signs of salivary lithiasis, the paroxysmal pains, the alternating swelling and subsiding of a submaxillary tumor, the discharge of purulent saliva from the tumor on compression and palpation of a hard substance, the complete permeability of Wharton's duct for the catheter indicated the location of the trouble. The preferable operation is the systematic extirpation of the submaxillary gland, as the acute inflammation caused by the calculi is certain to be followed by sclerosis of the gland. Even if the inflammation is slight, the gland should be removed to prevent recurrence. The operation is simple and easy. The facial vein has to be severed, but the facial artery and the hypoglossus nerve are left intact. The insignificant scar is hidden by the lower jaw.

Varices of the Base of the Tongue as a Sign of Cancer of the Esophagus. LEFRANCOIS.—Painful varices at the base of the tongue were the only lesions discoverable in three patients who complained of dysphagia. Each one died within a year from cancer of the esophagus. Lefrancois queries whether the varices may not have been the first clinical symptom of the cancer below, or whether their presence was a mere coincidence.

Semaine Medicale (Paris), September 25.

Syringomyelia of the Medulla and Pons. RAYMOND.—In the case described, motor paralysis of all the limbs, with spasmodic paralysis of the legs, dissociated sensibility and kyphoscoliosis coincided with other symptoms which indicated a lesion in the medulla, atrophy of the left half of the tongue, neuro-paralytic keratitis of the left eye, lateral nystagmus and anesthesia of the left trifacial nerve and of the mucosa of the back of the throat. Raymond's pupils have been studying the lesions in the autopsies of cases of syringomyelia during the last six years. They have found that the first lesion occurs in the region around the ependyma, near the central canal of the spinal cord, gradually invading the posterior cornu, the base of the anterior cornu and the adjacent portions of the white tracts. The lesion may range from an insignificant fissure with compact walls to an immense cavity involving all the elements of the cord and medulla. The spinal meninges may or may not be affected. Microscopic sections have fully demonstrated the inconstant relation of the syringomyelic gliosis with the central canal, and its special fissure-forming development. It is evident that certain cases of hypertrophic cervical pachymeningitis, but not all, belong in the domain of syringomyelia. Syringomyelia is, therefore, a definite affection like sclerosis in plaques. Its essence is a specific gliosis, produced independently of any other pre-existing lesion or affection of the spinal cord, such as myelitis or sclerosis, by the proliferation of the neuroglia in response to multiple pathogenic causes. This gliosis is to be distinguished from glioma and from cavity-forming myelitis. The syringomyelic lesion may spread laterally or longitudinally and consequently may affect the most varied anatomic and functional systems, inducing equally variable associations of symptoms. It may simulate more or less deceptively almost any one or all of the affections due to disease of the spinal cord or medulla, from progressive muscular atrophy to tabes and leprosy. But there is always a fourfold group of morbid phenomena more or less evident in syringomyelia: trophic disturbances, dissociated superficial sensibility and a tendency to scoliosis and paralytic motor troubles. The lesions are incurable, but as long as they are restricted to the spinal cord, long survival is possible. When the symptoms indicate that the medulla and pons have been invaded, a rapidly fatal termination is inevitable.

Simultaneous Appearance of Mosquitoes and Malaria. A. BILLET.—This communication from Algeria states that a careful watch was kept for the first appearance of anopheles, to determine if it coincided with the first cases of malaria. The mosquitoes began to arrive June 15, and between June 26 and July 10, seven soldiers who had arrived during the winter, were received at the hospital affected with malarial fever, the first malarial patients of the year.

Two Cases of Actinomycosis in the Parametrium. C. FEHMERS.—A woman in good health and menstruating normally, noticed pains in the right half of the abdomen and discovered a tumor. Three weeks later she entered the hospital and, with a diagnosis of pelvic peritonitis, the posterior cul-de-sac was incised and drained. The patient was much relieved but returned a month later on account of a lumbar abscess communicating with the initial pelvic focus. Actinomyces were found in the pus, and iodin treatment was commenced. A series of abscesses formed in the lumbar region and abdominal walls, with a stercoral fistula. After eighteen months of treatment, the patient seemed to be practically cured, although the fistula still persisted. She returned a year later with recurrence of severe symptoms, and died in collapse during the laparotomy. The intestines and uterus were found solidly fixed and altered by the lesions and adhesions. The patient had had one pregnancy years before. In the second case, the patient was a multipara, with abundant and prolonged menstruation. During a convalescence from typhoid fever, a sudden pain attracted attention to the right hypogastrium and a tumor was discovered, assumed to be a suppurating ovarian cyst. At the laparotomy the tissues were found much infiltrated and a focus of pus containing actinomyces was discovered. Vigorous local and general iodin treatment was instituted, and the patient seems to be completely recovered. The cases are reported in detail in the *Nederl. Tijdschr. v. Geneesk.* of June 29.

Deutsche Med. Wochenschrift, October 3.

Treatment of Anthrax. F. SCHULTZE.—Strubell described last year a case of malignant pustule just below the eye, which he cured by the application of hot compresses, renewed every ten minutes, night and day, supplemented by injections of 12 c.c. of a 3 per cent. solution of carbolic acid. Schultze relates a similar case of malignant pustule also just below the eye. The treatment was restricted to the application of a sublimate 1 to 1000 dressing, in a 70 per cent. alcoholic solution over the ulcerating portions. Quinin was given in 30 cg. doses every three hours during the febrile period, and 30 cg. of naphthalin were administered occasionally on account of the diarrhea. The patient progressed even more rapidly to recovery than Strubell's patient, although the symptoms were if anything more serious. The intoxication is the chief danger in such cases, and it presents a clinical picture closely resembling that of typhoid fever, aside from the local phenomena. The bronchi and kidneys as well as the intestines were involved and the cerebral symptoms were the same as those observed in typhoid fever.

Electric Light Sweat Baths. KREBS.—As the results of experiences and observation at the hydrotherapeutic institution connected with the University of Berlin, Krebs announces that incandescent light baths induce profuse sweating more rapidly and at a lower temperature than is required for hot-air baths. This effect is probably due to the heat rays in these lights. The arc light is much less effective. Patients with organic heart defects may find these baths injurious.

Prognosis of Diabetes and Tuberculosis. G. OEDER.—It is usually supposed that tuberculosis in a diabetic subject runs an unusually rapid course. Oeder describes the case of a diabetic patient who has exhibited unmistakable symptoms of pulmonary tuberculosis for six years, but both diseases have seemed to be in *statu quo* for several years.

Monatsschrift f. Geb. u. Gyn. (Berlin), July.

Metastases in the Ovaries in Case of Primary Abdominal Malignant Disease Elsewhere. E. KRAUS.—The 11 observations collected include 3 in which the primary carcinoma was located in the stomach, and 7 in the gall-bladder or biliary passages. The patients had been operated on for the easily diagnosed tumor in the ovaries, which was merely a metastasis of the small primary tumor elsewhere which had been completely overlooked. The slight symptoms on the part of the alimentary canal had been attributed to reflex irritation. The patients bore the ovariotomy well, but succumbed later to the graduai evolution of the primary tumor, which could easily have been removed at the same time if its presence had been suspected. Kraus urges search for a primary tumor when both ovaries form cancerous, knobby tumors, and section shows the characteristic peripheral arrangement of the tumor masses. If the ovaries are found even slightly enlarged and hard, during the extirpation of a primary neoplasm in any abdominal organ, they should be considered suspicious, especially if nodules are discovered in Douglas' pouch. He reports experiments which demonstrate that cancerous elements are able to penetrate into the intact ovary from its outer surface, even in the case of rabbits' ovaries, which are smaller and less exposed to danger of penetration than the human ovary.

August.

Stimulation of Labor by Intrauterine Rubber Bag. G. HAUFFE.—The advantages of the rubber bags used by Hauffe are that when distended with fluid, they are comparatively hard, and prove an energetic stimulus to the contractions of the uterus, much more so than the soft bags ordinarily employed for this purpose.

September.

Diagnosis of a Vesicular Mole. W. POTEN.—The diagnosis of a vesicular mole is sustained by the lack of elastic tension in the walls of the uterus, which feel like soft clay on palpation. There are also, in case of a vesicular mole, peculiar contractions of circumscribed portions of the uterine walls, occurring spasmodically and subsiding completely. In one case the uterus seemed to contain a hard myoma, the size of a fist, in an otherwise soft organ. Half an hour later, the supposed myoma had vanished to reappear again in another portion of the organ. The patient is not conscious of these contractions. In three cases described, the patients were in the sixth to the ninth month of pregnancy. In another case, the mole had ceased to proliferate, remained in the uterus like an inert foreign body and was finally expelled. In two other cases the symptoms had some analogy with those described, but a macerated fetus instead of a mole was found in each instance.

Heart Defects and Pregnancy. O. FILLNER.—The prognosis of pregnancy in case of cardiac defect is not so serious as has been generally assumed, judging from the experiences at Schauta's clinic since 1892. They include 94 patients with 305 births, out of a total of 30,613 deliveries in the Maternity. Fillner has also collected 140 cases from the literature, with 520 births. The results show that with appropriate treatment the overwhelming majority of the patients pass through the stress of childbirth without any special disturbance or even a suspicion of their cardiac defect. Delivery is frequently longer than usual. In all cases of uncompensated cardiac defect a more or less extensive ring of necrosis is found at the edge of the placenta. The pregnancy was spontaneously interrupted in 20.2 per cent. of the cases, with a mortality of 25.5 per cent. for the children. Only a very small percentage succumbed to the heart trouble; 6.3 per cent. at Schauta's clinic and .9 per cent. of all those systematically investigated. Mitral stenosis alone seems to afford an unfavorable prognosis. In other conditions, it is not the kind, but the extent of the defect which is the decisive element. Only in the rarest cases is any unfavorable influence on the heart defect from the pregnancy to be discovered. In case of compensated defect, premature delivery is not indicated unless the patient was in peril of death in previous childbirths. In case of uncompensated defect premature delivery is indicated only when treatment has no chance of success; otherwise internal treatment should be applied first and after improvement has been obtained, the pregnancy should be artificially interrupted. Mitral stenosis, and the complication of a cardiac defect by chronic nephritis or tuberculosis, require more vigorous procedures. In case of compensated defect, the bougie alone should be used. If a fatal termination is imminent, the fetal membranes should be ruptured which will give temporary relief, and may prove useful in case of edema of the lungs. It is better not to wait too long before applying the forceps in case of an uncompensated cardiac defect. Marriage need be forbidden only in case of pronounced disturbances in compensation, or mitral stenosis or a defect complicated by tuberculosis and chronic nephritis. If severe disturbances in compensation appear during the course of a pregnancy, future pregnancies should be forbidden, and in case of deadly peril during a pregnancy, the patient should be rendered sterile.

Muenchener Med. Wochenschrift, September 24.

Senile Pruritus of the Tongue. E. BAUMGARTEN.—During the last three years Baumgarten has had occasion to observe two cases of pruritus of the tongue, occurring in elderly women, with all the characteristics of senile pruritus of the skin, and in one case followed later by cutaneous manifestations. A long array of remedies was tried, but without avail, the pruritus persisting unaffected. Some local or general cause can usually be found for tongue troubles and the diagnosis of senile pruritus should not be made until after the exclusion of affections of the stomach or intestines, constipation or other general cause, including the dry catarrh of the throat which is a frequent companion of the menopause, and usually coincides with dryness, smarting and burning sensations in the tongue. The latter may also occur in cases of disturbed menstruation. Pure neuralgia of the tongue is extremely rare, but neurasthenic disturbances involving the tongue are not infrequent in both men and women. In three cases Baumgarten diagnosed

tubes from the pains in the tongue alone, nfirmed by the ter course of the disease. Pains and smarty of the tongue, ecially when accompanied by ptyalism, arvery suspicious of commencing paralysis. In other cases, the mptoms noticed in the tongue were the precursors of som local affection. Varices of the base of the tongue are cauteriz by some physicians, but this is useless unless the general ase inducing them is removed.

Lysol Intoxication. G. BURGL.—Two cases are related in which pure lysol was administered to a child by mistake, and eighteen cases of lysol intoxication in the literature are reviewed. They show that prompt use of the stomach pump was followed by the recovery of all the patients thus treaed, while the neglect of this measure was almost invariably fatal. The solution should never be stronger than 1 per cent. for external application and .5 per cent. for irrigating internal avities. It should never be used long at a time. One deat has been known from the external application of pure lysol n the intact skin. If it is administered internally, the minmal dose should be taken as the standard, and it should never e given except for a brief period and better not at all, in case of children or feeble patients. In the 18 cases collected, the toxication occurred in 13 from internal and in 5 from exteral use of the agent. Nine of the patients died, 5 children a one after internal administration, and 2 adults and one child after the application of pure lysol externally, by mistak for the 1 per cent. solution that had been ordered. The lagest dose from which the patient recovered was 60 gm., taken y a woman, and 25 gm. by a 4-year-old child. The smallest ose that proved fatal was a teaspoonful, about 4 to 5 gm. of pre lysol, in children from 5 days to 8 years old.

Tamponing the Abdominal Cavity with Air to Arrst Threatening Hemorrhage. G. KELLING.—A series of experiments on dogs and cadavers are described, showing the harmlessness of this measure and its efficacy in arresting threatenng internal hemorrhage. The accumulations of ascitic fluid in he abdomen prove that it will tolerate considerable stretching. Tests on seven cadavers of adults between 37 and 87, demonstrated that the abdomen could be thus inflated to a pressure of 150 mm. mercury or 1.5 meter water without laceration of the peritoneum. The apparatus consists of a T-shaped glass tube connected by a rubber tube with the mercury column at one end; with a double rubber air bulb at the other, and with the puncturing needle on the third branch. The tube connecting with the needle is interrupted by two bottle-shaped bottomless glass tubes, connected by a short rubber tube. The broad part of these bottle-shaped tubes is loosely packed with cotton to filter the air. It is injected under close supervision of the respiration and heart action, until a negative pressure of 30 mm. mercury or, better still, of 50 mm. is obtained. The stomach, bladder and rectum are liable to evacuate their contents by the mechanical effect of the pressure, for which preparations must be made. In case of hemorrhage of the stomach, some substance to promote coagulation should be administered by the mouth before injecting the air. After numerous tests, Kelling found pulverized chalk mixed with milk, the most effective local measure for this purpose. It can be administered by the mouth in not too small amounts. He has never had an opportunity to apply this tamponing measure in the clinic, but his tests on large dogs have been so successful that he is confident it will prove extremely useful in practical application to patients. He warns that the subjective sensations are no criterion, but that the circulation and pulse must be carefully watched. The first part of his report was published in THE JOURNAL of October 12, p. 1010.

Brazil-Medico (Rio de Janeiro), September 1.

Death After Spinal Tropa Cocainization. D. DE ALMEIDA. The patient in the case reported was 80 years of age, and had eaten nothing for three or four days. The operation was undertaken for the relief of incarcerated inguinal hernia, and 2 cg. of tropacocain were injected in the subarachnoid space, in a 2 per cent. solution. A few minutes after the operation had been completed, the pulsations of the heart gradually grew less and less perceptible, and the patient died with no other symptoms except this quiet failing of the heart action.

Proofs in Favor of the Transmission of Yellow Fever by Mosquitoes. E. M. RIBAS.—The superintendent of the board of health at Sao Paulo, Dr. Ribas, is convinced of the plausibility of the mosquito theory and suggests that mosquitoes may bite during the hours of early morning, while the subjects are still sleeping, as the culex teniatus is not a night insect. He describes a convincing incident in the outbreak of yellow fever at Sao Paulo in 1900. No cases had been known in town for a long time, when an Italian ship arrived from Rio, January 2, and one of the crew suffering from yellow fever was received in the hospital. Fourteen days later, five other yellow-fever patients were admitted. All were sailors from two vessels moored along the quays near the Italian ship. The culex teniatus is found in the street that fronts the quays, and the row of ships formed as it were, a row of dwellings on the seaward side of the street, where the culex could easily penetrate. Other sailors were affected soon afterward; all being men who had lived a number of months in the town without previous infection. The epidemic was arrested after it had attacked 490 out of the 50,000 inhabitants of the town. The sanitary measures applied in the infected ships and dwellings probably destroyed the infected mosquitoes, and thus contributed to the arrest of the epidemic.

Cirugia Contemporanea (Mexico), September 15.

Intra-Arachnoid Cocainization in Mexico. R. NORMA.—Eighty-seven operations have been reported in Mexico, done under spinal cocainization. No threatening by-effects were noted in any case; in 31 no symptoms of any kind were observed, in 32 the usual slight headache, vomiting or nausea. In one case an overdose was used, with the symptoms to be anticipated in such a case. In two other cases, one a hysteric and one a much debilitated hemiplegic, the temperature rose to 104 F. in one, and syncope occurred in the other. Norma considers that the simplicity and prompt efficacy of this method of surgical analgesia commend it particularly for alcoholic subjects.

Cronica Medica Mexicana (Mexico), October 1.

Mercury for Injection Into Vessels for Radiography. D. GARCIA.—Mercury answers all the conditions required to render even the most delicate macroscopic capillaries visible in radiography. Garcia has devised an apparatus for the purpose, a glass canula with two stopcocks and graduated receptacle, which enables the injection to proceed without admixture of air. Radiographs of anatomic specimens thus prepared were remarkable for the wealth of details, as even a thickness of one-tenth of a millimeter casts a clear shadow.

Value of Ferric Chlorid in Therapeutics. J. B. HERNANDEZ.—The remarkable anticongestive, antiphlogistic, antisuppurative and anti-exudative action of ferric chlorid is proclaimed by Hernandez. He considers it superior to all other substances for the treatment of superficial inflammatory or catarrhal lesions. It is ineffective in profound inflammation and actually injurious in chronic inflammation But it has proved remarkably beneficial in his experience in erysipelas, phlegmons, smallpox, eczema, herpes zoster, and catarrh of the vagina, cervix and conjunctiva. It is also valuable in acne rosacea, anthrax, hemorrhoids, gastritis, otitis, rhinitis, rectitis, gonorrhea and catarrhal metritis of the fundus. He uses the chlorid in "Pravaz's solution," and appends to this communication numerous case—reports to substantiate his statements.

Cronica Medica (Lima), xvii, 301 and 302.

Causal Agent of Verrugas Peruana. A. L. BARTON.—The researches of three years have been crowned with success, Barton announces, by the discovery of the bacillus derived from the spleen, blood and mesenteric ganglia of patients suffering from verrugas. Inoculated into animals it produces the typical symptoms of the clinical disease. It is extremely motile, stains readily, is not pyogenic, and is more pathogenic for the mule than for the dog, the only animals experimented on.

Queries and Minor Notes.

TEACHING OF PHYSICAL THERAPEUTICS.

PHILADELPHIA, Oct. 8, 1901.

To the Editor:—In an editorial in THE JOURNAL of Oct. 5, 1901, p. 916, you refer to the subject of the "teaching of physical therapeutics," and state that there are at present being published in English and German, systems of therapeutics in which physical agents especially are discussed. I shall be under many obligations to you if you will kindly indicate the publications to which you refer, because I am very much interested in this subject and desire all the information with regard to publications obtainable.

B. H. D.

ANS.—P. Blakiston's Son & Co. are publishing a "System of Physiologic Therapeutics," edited by Dr. S. Solis-Cohen; there is in process of publication a "Handbuch der Physikalischen Therapie," edited by Goldscheider and Jacob (George Thieme, Leipsic). Further, there is a German periodical, *Zeitschrift für diätetische und physikalische Therapie*, edited by Leyden and Goldscheider, and there is also published in Great Britain a *Journal for Physiological* (or Physical) *Therapeutics*.

AKOUPHONE.

CONCORDIA, KAN., Sept. 18, 1901.

To the Editor:—In THE JOURNAL of April 6, 1901, p. 982, is a description of the akouphone and akoulalion by J. R. Hutchinson, before the New York Academy of Medicine. Can you give me the address of the manufacturer? I have a child I desire to try one on.

W. F. S.

ANS.—Address the Akouphone Company, 43 E. 20th St., New York City.

The Public Service.

Army Changes.

Movements of Army Medical Officers under orders from the Adjutant-General's Office, Washington, D. C., October 3 to 9, inclusive:

William J. Calvert, lieutenant and asst.-surgeon, U. S. A., leave of absence granted.

W. Fitzhugh Carter, major and surgeon, U. S. A., will accompany the Third Battalion of Engineers to Washington Barracks, D. C., and thereafter return to his proper station, Fort Totten, N. Y.

Max F. Clausius, contract surgeon, previous orders directing him to proceed to his home for annulment of contract, revoked.

John Ryan Devereux, lieutenant and asst.-surgeon, U. S. A., from duty at Washington Barracks, D. C., via Tampa, Fla., to Havana, Cuba, for assignment in the Department of Cuba.

Clyde S. Ford, lieutenant and asst-surgeon, U. S. A., former orders directing him to proceed to Fort Morgan, Ala., revoked; he will repair to Washington, D. C., and report to the Surgeon-General for instructions.

Joseph H. Ford, lieutenant and asst.-surgeon, U. S. A., from Fort Washington, Md., to duty at Washington Barracks, D. C.

Myer Herman, captain and asst.-surgeon, Vols., having tendered his resignation, is honorably discharged from the service of the United States, to date from October 8, 1901.

James H. Holloway, contract surgeon, leave of absence extended.

William L. Kneedler, major and surgeon, U. S. A., leave of absence granted.

Conrad E. Koerper, lieutenant and asst.-surgeon, U. S. A., now on duty at the General Hospital, Washington Barracks, D. C., to report for temporary duty to the commanding officer of that post.

Clarence B. Millhoff, lieutenant and asst.-surgeon, U. S. A., leave of absence extended.

Arthur W. Morse, lieutenant and asst.-surgeon, U. S. A., from the U. S. General Hospital, Presidio of San Francisco, Cal., to post duty at Fort Walla Walla, Wash.

Edward L. Munson, captain and asst.-surgeon, U. S. A., will, on the completion of his present duty at the Pan-American Exposition, Buffalo, N. Y., repair to Washington, D. C., for duty in the office of the Surgeon-General.

Junius L. Powell, major and surgeon, U. S. A., is relieved from further duty in the Division of the Philippines and assigned to post duty at Fort Hamilton, N. Y.

Frederick F. Russell, lieutenant and asst.-surgeon, U. S. A., now in New York City, will proceed to Fort Washington, Md., for post duty.

Paul S. Shillock, major and surgeon, U. S. A., leave of absence granted.

Herbert M. Smith, lieutenant and asst.-surgeon, U. S. A., recently appointed, from Salem to Fort Monroe, Va., for temporary duty.

W. Manley Waterhouse, contract surgeon, former orders relieving him from further duty on the transport *Logan*, and from temporary duty at the General Hospital, Presidio of San Francisco, Cal., and directing him to proceed to Fort Grant, Ariz., for post duty, revoked.

Navy Changes.

Changes in the Medical Corps of the Navy, week ending Oct. 12, 1901:

Surgeon L. L. Von Wedekind, detached from the Puget Sound Naval Station and ordered home and to wait orders.

Surgeon O. D. Norton, detached from the *Monadnock*, on reporting of relief, and ordered home and to wait orders.

P. A. Surgeon D. H. Morgan, ordered to the *Philadelphia*.

P. A. Surgeon A. W. Dunbar, detached from the Naval Hospital, Mare Island, Cal., and ordered to the Puget Sound Naval Station.

P. A. Surgeon G. Evans, detached from the *Solace*, upon reporting of relief, and ordered home and to wait orders.

P. A. Surgeon R. Alfred, detached from the Marine Barracks, Cavite, P. I., and ordered to the *Monadnock*.

P. A. Surgeon M. Moore, detached from the *Franklin*, upon reporting of relief, and ordered to the *Indiana*.

Asst.-Surgeon G. G. Smith, detached from the *Alvarado* and ordered to the *Marietta*.

Asst.-Surgeon F. E. McCullough, detached from the *Philadelphia* and ordered to the Naval Hospital, Mare Island, Cal.

Asst.-Surgeon J. T. Murphy, detached from the *Indiana*, upon reporting of relief, and ordered to the *Solace* for temporary duty, and then to the Marine Barracks, Cavite Naval Station.

Asst.-Surgeon W. H. Bell, ordered to the *Franklin*.

Asst.-Surgeon R. G. Beebe, detached from the *Marietta*, upon reporting of relief, and ordered home to wait orders.

Asst.-Surgeons A. M. Fauntleroy and L. W. Bishop, commissioned assistant-surgeons from Sept. 28, 1901.

Surgeon C. F. Stokes, detached from the *Oregon* and ordered to the *Solace*.

Surgeon G. A. Lang, detached from the Marine Barracks, Cavite Naval Station on reporting of relief, and ordered home and to wait orders.

Surgeon L. W. Spratling, commissioned surgeon from Sept. 28, 1901; detached from the Naval Hospital, Cavite, P. I., on reporting of relief, and ordered home and to wait orders.

P. A. Surgeon M. S. Guest, detached from the Naval Hospital, Philadelphia, Pa., and ordered to the *Solace*, for temporary duty, and ordered to the Cavite Naval Station, on arrival at the Asiatic Station.

P. A. Surgeon A. Farenholt, ordered to the *Independence*.

P. A. Surgeon M. K. Johnson, detached from duty at Guam, on reporting of relief, and ordered to the Marine Barracks, Cavite Naval Station.

Asst.-Surgeon C. D. Langhorne, ordered to the Naval Hospital, Naval Home, Philadelphia, Pa.

Asst.-Surgeon W. Seaman, detached from the *Independence*, on reporting of relief, and ordered to the *Solace* for temporary duty, and ordered to duty at Guam, on arrival at that place.

Asst.-Surgeon H. M. Tolfree, detached from the *Columbia* and ordered to the *Solace* for temporary duty, and ordered to duty at Guam on arrival at that place.

Asst.-Surgeon J. B. Dennis, detached from the Naval Academy and ordered to the Naval Hospital, New York.

Asst.-Surgeon R. M. Young, detached from the New York Navy Yard and ordered to the *Columbia*.

Asst.-Surgeon R. M. Fauntleroy, ordered to the Naval Academy.

Asst.-Surgeon J. J. Snyder, detached from duty at Poloc, P. I., and ordered to the Naval Hospital, Cavite, P. I., for treatment.

P. A. Surgeon J. A. Guthrie, detached from the *New York* and ordered to duty at Port Isabella, P. I.

Asst.-Surgeon R. K. McClanahan, detached from duty at Port Isabella, P. I., and ordered to duty at Poloc, P. I.

Asst.-Surgeon F. A. Asserson, detached from the *General Alava* and ordered to the *New York*.

Asst.-Surgeon F. I. Benton, detached from the *Brooklyn* and ordered home.

Health Reports.

The following cases of smallpox, yellow fever, cholera, and plague have been reported to the Surgeon-General, U. S. Marine-Hospital Service, during the week ended Oct. 5, 1901:

SMALLPOX—UNITED STATES.

Alaska: Dawson, Oct. 1, 6 cases.
District of Columbia: Washington, Sept. 28-Oct. 5, 1 case.
Indiana: Michigan City, Sept. 30-Oct. 7, 1 case.
Massachusetts: Sept. 30-Oct. 5, Boston, 9 cases, 1 death; Newton, 1 case.
Michigan: Detroit, Sept. 30-Oct. 5, 1 case.
Minnesota: Minneapolis, Sept 30-Oct. 5, 1 case.
Nebraska: Omaha, Sept. 30-Oct. 5, 2 cases.
New Jersey: Newark, Sept. 30-Oct. 5, 2 cases, 2 deaths.
New York: Sept. 30-Oct. 5, Elmira, 1 case; New York, 7 cases, 2 deaths.
Ohio: Cleveland, Sept. 30-Oct. 5, 4 cases.
Pennsylvania: Erie, Sept. 21-28, 2 cases; Philadelphia, Sept. 30-Oct. 5, 40 cases, 6 deaths.
Utah: Salt Lake City, Sept. 30-Oct. 5, 2 cases.

SMALLPOX—FOREIGN.

Austria: Prague, Sept. 7-14, 1 case.
Belgium: Sept. 14-21, Antwerp, 5 cases, 1 death; Ghent, 1 death.
Brazil: Pernambuco, Aug. 15-31, 73 deaths; Rio de Janeiro, Aug. 18-Sept. 1, 115 deaths.
Canada: Halifax, Sept. 22-Oct. 5, 20 cases; Winnipeg, Sept. 14-21, 1 case.
Colombia: Colon, Sept. 30, epidemic.
France: Paris, Sept. 7-14, 2 cases.
Great Britain: Dundee, Sept. 14-28, 2 cases; London, Sept. 14-21, 288 cases, 13 deaths.
India: Bombay, Sept. 3-10, 1 death; Calcutta, Aug. 24-Sept. 7, 4 deaths; Madras, Aug. 24-Sept. 6, 8 deaths.
Mexico: City of Mexico, Sept. 15-22, 1 case.

PLAGUE—FOREIGN.

Philippine Islands: Manila, Aug. 10-24, 15 cases.

PLAGUE—FOREIGN.

Brazil: Rio de Janeiro, Aug. 18-Sept. 1, 5 deaths.
India: Bombay, Sept. 3-10, 275 deaths; Calcutta, Aug. 24-Sept. 7, 34 deaths; Karachi, Aug. 25-Sept. 8, 35 cases, 11 deaths.

YELLOW FEVER.

Brazil: Rio de Janeiro, Aug. 18-Sept. 1, 3 deaths.
Costa Rica: Port Limon, Sept. 14-28, 9 cases, 7 deaths.
Cuba: Havana, Sept. 21-28, 1 case.
Mexico: Merida, Aug. 31-Sept. 14, 5 deaths; Vera Cruz, Sept. 22-29, 2 cases, 2 deaths.

CHOLERA.

India: Bombay, Sept. 3-10, 4 deaths; Calcutta, Aug. 24-Sept. 7, 9 deaths; Madras, Aug. 24-Sept. 6, 254 deaths.